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THE ANTIQUARIAN.

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FOR SCIENTIST AND STUDENT.

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VOLUME ONE.

DR. J. F. SNYDER, Editor-in-Chief, Virginia, Ill. ; DR. CLARENCE LOVEBERRY,
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THE ANTIQUARIAN.

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THE FOOD OF CERTAIN AMERICAN INDIANS.

LUCIEN CARR.

[Prof. Carr's recent article in the Report of the American Antiquarian Society, (April, 1895,) is of such importance to students that we shall reproduce it in full in the January-February-March numbers of the *The Antiquarian*.—Editors.]

The theory that "a man is what he eats" can hardly be said to account for all the phenomena that attended the progress of the human race from savagery to civilization, and yet there is truth enough in it to justify an examination into the food supply of any people whose position in the scale of development may become a subject of inquiry. Especially is this true of savage and barbarous peoples, or rather it will apply to any people—ourselves for example—in the early phases of existence; for within certain limits, there is believed to be no surer indicator of the different culture periods through which the race has progressed, than can be found in the arts of subsistence as they have been successively developed. Between the fruit and nut diet to which primeval man is supposed to have been limited, and the luxurious dinner table of his civilized descendant, there was a

long and wearisome journey; and looking back over the record, we find it divided into certain steps or stages, of which the hunter, the herdsman and the farmer may be considered as living embodiments.

Useful as is this classification, it is arbitrary, and so far as it is based upon only one race of the many lines of development along which the race must move, it is incomplete. So, too, there are instances in which, owing to what Morgan¹ terms "the unequal endowment of the two hemispheres" in the way of animal and plant life, it is inapplicable. On the other hand, it possesses the merit of describing states of society that are not only not imaginary, but are in actual existence; and these states follow each other in such an orderly fashion that civilization may be said to have grown up through them². It is even doubtful whether it could have been developed under any other conditions.

Upon this point an examination into the methods of subsistence of our North American Indians may throw some light. When first known to us, they were hunters; i. e., they were still in the first or lowest stage of existence; for although they cultivated corn³, beans, tobacco⁴ and other things, and

fondement de la nourriture de presque toutes les Nations sédentaires d'un bout de l'Amérique a l'autre": Lafitau, "Mœurs, des Sauvages "Américains," Tome III., p. 57, Paris, 1724. "Cf. Maize: A Botanical and Economic Study," by John W. Harshberger, Philadelphia, 1893.

⁴"There groweth also a certain kind of herbe, whereof in Sommer they make great provision for all the yeere, making great account of it, and onely men use of it, and first they cause it to be dried in the Sunne, then weare it about their neckes wrapped in a little beaste's skinne

¹Ancient Society, pp. 11, 22, 25: New York, 1877.

²Tylor, Anthropology, p. 24: New York, 1881.

³"It was found in cultivation from the Southern extremity of Chili to the fortieth parallel of north latitude, beyond which limits the low temperature renders it an uncertain crop"; Brinton, "Myths of the New World," p. 23, New York, 1873. "Le Mahiz . . . est la nourriture principale des Peuples de l'Amérique": Le Page du Pratz, "Histoire de la Louisiane," Tome III., p. 342, Paris, 1758. "Le mais . . . lequel est le

were thus entitled to rank as farmers, yet they had no domestic animals,⁵ unless dogs are to be considered as such,⁶ and this made them dependent upon the chase for a large part of their food, and, of course, limited or rather prevented their progress beyond the savage condition in which they were found. Whether, alone and unaided, they could have extricated themselves from this anomalous position, is a matter into which we need not inquire. All that can be said is that they had the buffalo;⁷ and whilst it was certainly possible for them to utilize this animal in the shambles and in the cultivation of their fields, in such a manner as to give them practical control in the production of their food supply, yet they had not done so; and we may be very sure that without such control, population must necessarily have been limited,⁸ and civilization

made like a little bagge, with a hollow peece of wood or stone like a pipe; then when they please they make powder of it, and then put it in one of the ends of the said cornet or pipe, and laying a cole of fire upon it, at the other end sucke so long, that they fill their bodies full of smoke, till that it cometh out of their mouth and nostrils, even as out of the Tonnell of a chimney": Cartier, in Hakluyt's "Early English Voyages to America," Vol. II., p. 127, Edinburgh, 1889. "Nous y veismes force citrouilles, courges et petuns qu'ils cultivent aussi": Champlain describing Indians of New England, Vol. I., pp. 95, 113, Paris, 1830. "Noz sauvages font aussi grand labourage de Petun . . . Ils sou tiendront quelque fois la faim huit jours avec cette fumee": Lescarbot, p. 811, Paris, 1866. Cf. Hariot, in Hakluyt, II., p. 339, Edinburgh, 1889. Adair, "History of the North American Indians," p. 408, London, 1775. Beverly, "Histoire de la Virginie," p. 207, Amsterdam, 1707. Le Page du Pratz, "Histoire de la Louisiane," Vol. III., p. 360, Paris, 1758. Bartram, "Travels through Florida," pp. 91, 191, Dublin, 1793. Hunter, "Memoirs," p. 257, London, 1824, tells us that the Osages "raised it for the consumption of their families," and Carver, "Travels," p. 37, says that the Winnebagoes of Wisconsin cultivated it. In the Relation for 1642, p. 97, and 1667, p. 23, Quebec, 1858, we find that the Sioux, "cultivent la terre à la façon de nos Hurons, recueillent du bled d' Inde et du Petun." Of the religious uses of tobacco, and of its effects physical, mental and moral, consult Lafitau, "Mœurs des Sauvages Ameriquains," III., pp. 115 et seq., Paris, 1724. Marquette, in "Discovery and Exploration of the Mississipp," pp.

on the lines on which they were moving was impossible.

But whilst all this is too plain to admit of an argument, it is well to remember that the terms hunter, herdsman and farmer and their analogues, savage, barbarian and civilized man, are general in their character, and like the conditions they describe, are susceptible of division. Indeed, there are occasions when even these minor divisions are so widely divergent that it may become necessary, in determining the culture-status of a people, to lay aside the general classification altogether, and to go into a critical examination of the details of their daily life. Such, in fact, seems to be the case with our Indians. For reasons given above, their advance along the lines over which they had to pass in their progress from savagery to civilization, was so un-

35 et seq., New York, 1852. Charlevoix, V., pp. 311 et seq., and VI., pp. 48, 70, 71, Paris, 1744. Perrot, pp. 20, 21, 66, 276, etc., Leipzig and Paris, 1864. Father Gravier, in "Shea's Early Voyages," pp. 129 et seq. Josselyn's "Two Voyages in 3d Series, Massachusetts Hist. Collections, Vol. III., p. 262. Relations, 1611, p. 16, Quebec, 1858. Williams's Key in Narragansett Club Publications," I., p. 43.

⁵Gomara's statement "No tienen sus dueños otra riqueza" in "Historie General de los Indians," p. 275, Anvers, 1554, is sometimes quoted as proof that the Indians had domesticated the buffalo, but it does not necessarily bear that interpretation, and besides it lacks confirmation. The same remark will apply to Champlain's statement, Vol. I., p. 377, Paris, 1830, that the Indians of Canada "engraissent aussi des ours qu' ils gardent deux ou trois ans pour se festoyer." That the Indians tamed turkeys, eagles, cranes and perhaps some other birds, as well as different kinds of animals, is well known, but they do not come within the terms of my assertion.

⁶Among the Indians of the plains, dogs were used as beasts of burden at a very early date. On this point see Gomara, in Hakluyt, "Early Voyages," Vol. III., p. 137, Edinburgh, 1890, and Castaneda in Ternaux Compans, IX., pp. 117, 190. The latter author says: "Les Querechos y Teyas ont de grands troupeaux de chiens qui portent leur bagage; ils l' attachent sur le dos de ces animaux au moyen d' une sangle et d' une petit bât. Quand le charge se dérange les chiens se mettent à hurler pour avertir leur maître de l' arranger."

equal that, on comparing them with their fellow savages of the eastern world, they will be found to have lagged behind in certain respects, whilst in others they were far ahead. Obviously, in a case of this kind the term savage, considered as a measure of progress, would have to very different meanings; and naturally enough, pictures taken from two such discordant points of view would have but little in common. To mark these discrepancies, and thus fix the Indian's place in the scale of civilization, as far as a study of the subject will enable us to do so, is the object of this inquiry into the food of certain of our tribes and their different methods of preparing it.

Speaking in a general way, the old chronicler was not far wrong when he told us that the Indian "lived on what he got by hunting, fishing and cultivating the soil."⁹ Unquestionably, he derived the bulk of his food from these sources, though there were times, and unfortunately they were somewhat frequent, when he as glad

to fill out his bill of fare with the fruits, nuts and edible roots and grasses with which a bountiful nature supplied him. Dividing all these different articles according to their nature and origin, and beginning with those the production of which is believed to indicate racial progress, we find that corn, beans and pumpkins were cultivated wherever, within the limits of the United States, they could be grown to advantage. Of these corn was by far the most important; and as it seems to have been the main dependence¹⁰ of all the tribes that lived south of the St. Lawrence and east of the tier of States that lines the west bank of the Mississippi, and as the manner of cultivating it and the different ways of cooking it were practically the same everywhere and at all times, we shall confine our remarks to it and to the Indians living within these limits, merely premising that much of what is said about it will apply to "its sisters," as beans and squashes were lovingly termed by the Iroquois.¹¹

⁷The buffalo was probably a late comer east of the Mississippi. J. A. Allen, in "American Bisons Living and Extinct," Cambridge, 1876, discusses at some length the question of the eastern limit of the range of the animal, and concludes that except in small numbers and occasional bands, it was not known east of the Alleghanys or south of the Tennessee. It did not reach either Canada or New York and the evidence of its existence in Florida and Alabama is regarded as doubtful.

⁸Cf. Gallatin, "Origin of American Civilization," in Transactions of the American Ethnological Society, Vol. I., p. 194; New York, 1845.

⁹"Leur coutume est que chaque mesnage vit de ce qu' il pesche, chasse t seme"; Sagard, "Voyage du Pays des Hurons," Vol. I., p. 92; Paris, 1865.

¹⁰"Leurs principal manger et vivre ordinaire est le bled d' Inde, et febves du Brésil qu' ils accommodent en plusieurs façons": Champlain, I., p. 374, Paris, 1830. "Corn is their chief produce and main dependence": Adair, "History of the American Indians," p. 407. "Les vivres que les sauvages aiment le plus et qu' ils recherchent davantage, sont, le bled d' Inde, les febves d' aricots et la citrouille. S' ils en manquoient, ils crolient jeûner, quelque abondance de viande ou de poissons qu' ils eussent chez eux": Perrot, p. 51, Leipzig, 1864. "Their food is gen-

erally boiled maize, or Indian corn, mixed with kidney beans, or sometimes without": Gookin, in first series, Mass. Hist. Coll., Vol. I., p. 150. "Ils regardaient toujours le blé comme le principal soutien de leur vie . . . ou qu' il leur arrivât quelque autre fâcheux revers, puis les empêchait d' aller à la chasse & à la Pêche. Alors le Maiz avec quelque peu de Pois, de Fèves . . . servait à l' entretien de leur femmes & de leurs enfans": Beverly, "Virginie," p. 203, Amsterdam, 1707. I have not an English edition of this valuable little book and make use of a French translation. Cf. Cyrus Thomas in "Twelfth Annual Report of the Bureau of Ethnology, pp. 617 et seq., and "Mounds of the Mississippi Valley, Historically Considered," in the Smithsonian Report for 1891, pp. 507-533 inclusive. It may be well to add that in this latter paper, the cultivation of corn by the Indians east of the Mississippi is discussed at length, and the reasons are there given which led me to the conclusion "that they raised corn in large quantities, and stored it in caches and granaries for winter use." Washington, 1893. "They live on Indian corn, and other fruits of the earth, which they cultivated on the prairies, like other Indians." Narrative of Father Allouez in "Discovery and Exploration of the Mississippi," p. 75.

¹¹Morgan, "League of the Iroquois," pp. 203, 204; Rochester, 1851.

And here, at the outset of our investigation, we are met by the fact that modern research has failed to throw a positive light was first cultivated at some point between the tropics is accepted.¹² Beyond this we have not been able to go; and without entering into a discussion of the subject, it is probably safe to assume that this is as near the truth as we can hope to get. However, be this as it may, there seems to be no doubt upon the question of its origin. That it was indigenous to America is generally believed, and so, also, the statement that it that its domestication took place ages ago, for in no other way is it thought possible to account for the vast extent of country over which its use had spread, and for the number of varieties to which it had given rise. Take our own country, for example, and when the whites first landed here, there were found growing, within certain limited areas, a number of different kinds, distinguished one from another, by the length of time they took to ripen, by the size of the ear, by the shape and hardness of the grain

and by the color, though this is said to be accidental.¹³

In addition to these, which were known to the whites as hominy corn, bread corn and six-weeks' corn,¹⁴ there was still another sort, called by the French *blé fleuri*, and by ourselves pop-corn, of which the Indians were very fond, and which they served up to those of their guests whom they wished to honor.¹⁵ With so many kinds, and planting them at different times during the spring and early summer, they not only had successive crops which they ate green as long as the season lasted,¹⁶ but they also raised enough for winter use and, not unfrequently, had some to spare to their needy neighbors, white as well as red. Indeed, their peddlers made long trips for the purpose of exchanging their surplus corn for skins and anything else that they needed;¹⁷ and but for the supplies which the Pilgrim fathers,¹⁸ and we may add the settlers at Jamestown¹⁹ and New Orleans,²⁰ "obtained from the Indians willingly or through force," it is probable, as a recent

¹²"Maize originated in all probability . . . north of the Isthmus of Tehuantepec and south of the twenty-second degree of north latitude, near the ancient seat of the Maya tribes." This is Harshberger's opinion in Vol. I., No. 2, of the Contributions from the Botanical Laboratory of the University of Pennsylvania, and I give it as being one of the latest expressions on the subject. Gallatin, in "Transactions of the American Ethnological Society, Vol. I., pp. 195 et seq., may be consulted to advantage.

¹³Beverly, "Historie de la Virginie," pp. 203 et seq., Amsterdam, 1707. Cf. Le Page du Pratz, Vol. II., pp. 3 et seq., Paris, 1758. Hariot in "Hakluyt's Early Voyages," Vol. II., p. 336, Edinburgh, 1889.

¹⁴Adair, "History of the American Indians," p. 407: London, 1775.

¹⁵Lafitau, III., p. 85, Paris, 1724. Charlevoix, Tome VI., p. 46, Paris, 1744.

¹⁶Capt. Smith, "General Historie of Virginia," Vol. I., p. 126: Richmond, 1819. Laudonnière, "Historie notable de la Floride," p. 11: Paris, 1853. Narrative of Father Marquette, p. 48, in Shea's "Discovery and Exploration of the Mississippi": New York, 1852. Lawson, "Carolina," p. 207: London, 1718. Beverly, "Virginie," p. 246: Amsterdam, 1707.

¹⁷"Et continuent ainsi jusques à ce qu'ils en ayent pour deux ou trois ans de provision, . . .

ou bien pour l'aller traicter en d'autres nations pour des pelletries, ou autres choses qui leur font besoin": Sagard, "Voyage des Hurons," Vol. I., p. 92, Paris 1865. "Their manner of trading is for copper, beads and such like, for which they give such commodities as they have, as skins, fowle, fish, flesh and their country corne": Smith, "Virginia," p. 137, Richmond, 1819. Cf. Charlevoix, V., p. 384, Paris, 1744. Champlain, Vol. I., pp. 357, 378, 382, Paris, 1830. Lawson, "Carolina," pp. 58, 176, 208, London, 1718. Cabeza de Vaca, translated by Buckiug-ham Smith, pp. 85 et seq.: New York, 1871. Lafitau, IV., pp. 42, 43, Paris, 1724.

¹⁸They got in this vooage, in one place and other about 26 or 28 hogsheads of corne and beans": Bradford's "History of Plymouth Plantation," in fourth series, Mass. Hist. Coll., Vol. III., p. 129. "Others fell to plaine stealing both night and day from ye Indeans, of which they grievously complained . . . Yea, in the end, they were faine to hange one of their men whom they could not reclaime from stealing": "Ibid," p. 130.

¹⁹"Such was the weakness of this poore commonwealth as, had the salvages not fed us, we directlle had starved": Smith, "Virginia," Vol. II., p. 30, Richmond, 1819. See, also, Vol. I., pp. 163, 191, etc., etc. "Many were billeted amongst the salvages": "Ibid.," p. 229. Cf. Master George

writer suggests, "that there would have been but few if any of their descendants left to write their histories and sing their praises."²¹

As a rule, but by no means an invariable one, the work of planting and the care of the fields were left to the women of the tribe.²² It seems to have been a part of their share of the labor which the duty of providing for the family imposed upon the sexes; and so far from being either onerous or compulsory,²³ it was carried on much in the manner of the husking, quilting and other frolics²⁴ of their English neighbors. Thus, we are told that the people of each village worked together in common, though the harvest was gathered separately. When notified by the town crier "that the time had come for planting their corn, and that they who will not work must pay a fine or leave the town,"²⁵ they began at one end of the com-

Percy in Purchas, Pilgrims, Vol. IV., p. 1690: London, 1625.

²⁰"Plusieurs Nation's sauvages s' etablirent sur le Mississippi assez pres de la Nouvelle Orleans et comme la plupart de ces Peuples sout dans l' usage de cultiver la terre, ils defricherent de grands terrains, ce qui fut une ressource pour cette ville a laquelle ils ont souvent fourni des vivres dans le besoin": Charlevoix, "Nouvelle France," Vol. IV., p. 198, Paris, 1744.

²¹Thomas, in "Twelfth Annual Report of the Bureau of Ethnology," p. 619: Washington, 1894.

²²"That whilst as a fact the women, children, old men and slaves always cultivated the fields, yet the warriors cleared the ground, and when not engaged in war or hunting, aided in working and harvesting the crop, though the amount of such assistance varied, being greater among the tribes south of the Ohio, and less among the Iroquois or Six Nations": Mounds of the Mississippi Valley, in Smithsonian Report for 1891, p. 533.

²³"Au reste ce travail n' est pas penible": Charlevoix "Nouvelle France," III., p. 23, Paris, 1744. "Elles traouillent ordinalement plus que les hommes, encore qu' elles n' y soient point forcees ny contraintes": Sagard, I., p. 90, Paris, 1865. "The work of the women is not hard or difficult. They are both able and willing to do it, and always perform it with cheerfulness": Heckwelder, "Indian Nations," p. 155, Philadelphia, 1876. Cf. Joutel in Hist. Coll. Louisiana, p. 149. Relation, 1634, p. 28, Quebec, 1858.

²⁴Heckwelder, "Indian Nations," p. 156, Philadelphia, 1876.

mon field, in a plot or patch of ground chosen by lot, and when this was finished they took up the next adjoining one, and so on until the whole field was planted.²⁶

"Sometimes one of their orators cleers them with jests and humorous old tales, and sings several of their most agreeable wild tunes, beating also with a stick in his right hand, on the top of an earthen pot covered with a wet and well-stretched deer-skin."²⁷ Having completed their task they were usually feasted by the families for whom they had worked.²⁸

In regard to the size of these several plots or holdings, there does not appear to have been any fixed rule.²⁹ Each person could reduce as much unoccupied land to cultivation as he pleased, and so long as he continued to use it, his right to it was protected. If, however, he abandoned it, anyone else might come in and take pos-

²⁵Adair, p. 407, London, 1775. "None are exempted from their share of labor": Hawkins, Sketch of Creek Country, p. 35, Savannah, 1848. "Do not allow any one to be idle, but all must employ themselves in some Work or other": Lawson, "Carolina," p. 179, London, 1718.

²⁶Lorsque la saison de labourer la terre est venue on s' assemble quelquefois jusqu', a cent Personnes, les Hommes et les Femmes separement. Ils travaillent ainsi jusqu' a ce qu' ils ayent cultivé une certain portion de Terrain dont le Propriétaire regale ensuite les Travailleurs, et le reste du jour se passe a dauser et a se divertir. Le lendemain on recommence, et cela dure jusqu' a ce que tous les Champs soient labourés": Charlevoix, III., p. 23, and VI., p. 45, Paris, 1744. Cf. Laftau, III., p. 70, Paris, 1724. Bartram's "Travels," p. 510, Dublin, 1793. Joutel, p. 149. Williams's Key, pp. 92, 93.

²⁷Adair, p. 407, London, 1775. Tonti, in "Hist. Coll. Louisiana," Part 1., p. 62.

²⁸Heckwelder, p. 156: Philadelphia, 1876. Charlevoix, "Nouvelle France," III., p. 22: Paris, 1744. Joutel in "Hist. Coll. Louisiana," I., p. 149.

²⁹"Their houses are in the midst of their fields or gardens, which are small plots of ground. Some 20 acres, some 40, some 100, some 200, some more, some lesse." Smith, "Virginia," p. 131, Richmond, 1819. "Every dwelling house has a small field close to it . . . Their large fields lie quite open with regard to fencing": Adair, p. 406, London, 1775. Cf. Bartram, "Florida," pp. 191, 192, for account of their several gardens and the common field.

session, for according to their ideas, the land belonged to the tribe and no person could acquire an absolute title to any portion of it.³⁰ But whilst we are in the dark as to the size of these individual holdings, it is possible from an examination of the early records and the reports of different military expeditions to get a more or less correct idea of the size of their common fields. For example, we are told that in 1674, the Indians had one thousand acres under corn at Mt. Hope.³¹ In 1687, Denonville invaded the Iroquois country, burned four villages, and including the corn in cache and what was standing, is said to have destroyed 400,000 minots or 1,200,000 bushels;³² and Gen-

eral Sullivan in his campaign against these same tribes in 1779, destroyed 160,000 bushels, and cut down in one orchard 1,500 apple trees.³³ Among the southern tribes we find the same story, for in the Gulf States their old fields were measured by miles and not by acres,³⁴ and General Wayne in December, 1794, writing from Grand Glaize, O., says: The margins of the Miamis of the Lake and the Au Glaize, "appear like one continued village for a number of miles, both above and below this place; nor have I ever before beheld such immense fields of corn in any part of America from Canada to Florida."³⁵

(TO BE CONTINUED.)

³⁰Sagard, p. 92: Paris, 1865. Morgan, "League of the Iroquoise," p. 326: Rochester, 1851. At a council held in St. Louis in 1810, Le Sonneur, an Osage chief, declared: "Our country belongs to our posterity as well as to ourselves; it is not absolutely ours; we received it only for our lifetime, and then to transmit it to our descendants": Brackenridge, "Views of Louisiana," Pittsburgh, 1814.

³¹Drake, "Indians of North America," fifteenth edition, p. 209.

³²Charlevoix, "Nouvelle France," II., p. 355: Paris, 1744. Compare Tonti, in "Hist. Coll. Louisiana," Part I., p. 70. See La Hontan, "Voyages," I., p. 101, A la Haye, 1703.

³³"History of New York During the Revolutionary War," Vol. II., p. 334: New York, 1879. Compare Stone's "Life of Brant," Vol. II., Chap. 1: Albany, 1865. Morgan, "League of the Iroquois," pp. 199, 314: Rochester, 1851.

³⁴Adair, pp. 225, 353, 411: London, 1775. Bartram, "Travels," pp. 54, 330, 348, 350, 352: Dublin, 1793. Compare Knight of Elvas, in "Hist. Coll. Louisiana," pp. 152, 172, 203, etc. Herrera, V., p. 317, London, 1740.

³⁵Quoted in "Our Indian Wards," p. 84: Cincinnati, 1880. Compare Butler's "Kentucky," p. 198, Louisville, 1834, where we are told that from four to five hundred acres of corn were destroyed.



A MOUND BUILDER'S VILLAGE.

Mr. Frank Hamilton Cushing writes for the *New York Journal* a long account of his recent explorations in Florida.

"I undertook the explorations of which I here give some account in the interest of the Department of Archaeology of the University of Pennsylvania, co-operating with the Smithsonian Bureau of American Ethnology. The collections and data I have thus been enabled to gather show that the ancient people of the keys and bayous to which they relate, were in many ways essentially different from any others of whom we have yet learned, but that their mode of living was somewhat similar to that of the famous Swiss Lake Dwellers of prehistoric Europe, and that their state of culture was in certain ways significantly like that of the mound builders—which it assuredly equalled—and was in yet other ways even more significantly like the barbaric civilization of the Mayas and other builders of the great ruined cities of Yucatan and contiguous portions of Central America."

He found several of the many islands lying off Charlotte Harbor to be rich in aboriginal remains.

"I sailed to one of the loneliest of these on the first day. It lay in the middle of the shimmering bay, miles from any other land of equal extent. It was a labor of hours to approach its shallow shores through the unbroken mass of many-trunked and myriad-rooted mangroves. I had to wade a long distance knee-deep in water and mud to reach what had seemed to be land, but only proved to be one of many long, low ridges of gigantic conch shells. The outermost of these formed a network of enclosures various in shape and size, or else the banks of straight channels, leading into higher platforms or

steeply ascending terraces, crowned by gigantic mounds—all of built-up masses of shell, blackened by time wherever visible through the tangle of distorted, vine-shrouded trees and cacti.

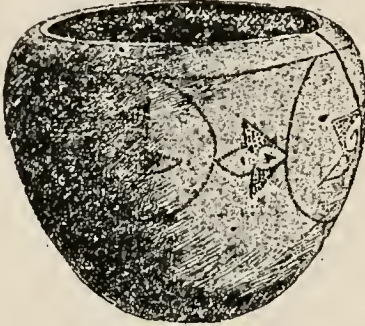
"Laboriously cutting my way up the steep face of one these mounds, I was astounded to find that it was not a mere irregular heap of refuse or rubbish, but one of a series of level-topped structures or pyramids towering around two or three great central lake courts or water plazas, from which deep channels led forth between the mounds and out through the surrounding platforms, enclosures and banks already described, into the waters of the bay. Through the deeper of these the sea still faintly ebbed and flowed.

"The largest of the courts, which had an extent of at least an acre, was the basin of a shallow lake, formed rather by the rearing of the structures around it, than by excavation or other artificial means, and filled to high-tide level with muck and peaty marl by washings from the heights around, and by the slow growth and depositions of vegetable matter. Near its marshy borders I found numerous sherds (fragments) of hand-made pottery and literally hundreds of busycon (conch) shells, pierced for hafting, the points of which had been variously shaped by grinding to form gouges, chisels, picks, hoes, hammers, and yet other kinds of weapon and tool. From all sides of this water plaza or court, graded ways—once beautifully sloped, but now in ruin—led up to the greater heights around.

"Suddenly I realized that I was standing amid vestiges of the shell foundations of a great ruined City of the Sea, so enormous that I could scarce believe it to have been the work of human hands.

"The plummets, pendants and other or-

namental and ceremonial objects of stone which we found were among the best products of the aboriginal lapidary's art I have yet seen. They were made of a great variety of material, from soft soapstone and spar to hard diorite and rock crystal; from hematite, polished like burnished steel, to clean-cut plates of mica and elaborately wrought, symbolic objects of copper.



TATOODED WATER JAR.

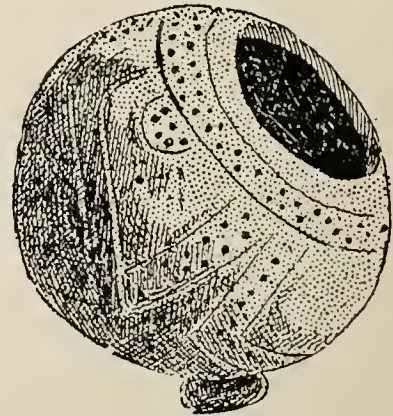
"The range of commerce that these things indicated was enormous. There was a fine-grained stone derived from the far West Indies, a shell from the Gulf of Campeche; the mica and rock crystal were of the Georgia and Carolina kinds, and the copper had been brought both from Lake Superior and from Cuba while the hematite and galena nodules were of the kind so often occurring in Missouri and Iowa.

"The most interesting objects that we found, however, were the vessels of pottery. Many of them were imitations of gourd utensils or vessels made from the hard rinds of various other kinds of fruit. Much of the pottery was obviously made in imitation also of wooden ware—probably survived a time when the ancestry of this people had no other sorts of dishes or vessels than these of gourd and wood.

"The surfaces of some were elaborately decorated with involuted concentric designs of the so-called "Caribbean" type,

but which I determined were artistic developments from the strongly marked graining of well-worn objects of wood, and may thus, as to art motive, have originated in part from the oft observed impressions on the clay forms while still wet, of coarse, curly-grained paddles of wood.

"There were tall vases highly finished, cylindrical and tapering, open at both ends, and so worn at the rims as to show that they were once, like their almost exact counterparts found in Central America, used as drums. In proof of this there were delineated on one of them at the top and bottom, round symbols of sound—with the song marks in the shape of conventionalized drum-sticks issuing from them, while between, over the center of this terracotta drum, was painted and incised in chrome yellow and bright red colors the great square of the world, with the trails or song lines of the four quarters pointing out toward the corners.



FOOD JAR.

"Clean-cut sections which I was able to make in various of the shell islands or keys—one to below the gulf level, a depth of more than eighteen feet through the heart of the central mounds—showed them to be artificial from top to bottom and

from shore to shore; to have been built up from slowly accumulated shell material systematically distributed throughout ages and ages, or else by the hand of myriad clansmen, laboring together and with fixed purposes for at least generations.



PELICAN GOD MASK.

"All which and much else that I have related goes to show that very long ago there came, it may have been from South America, where pile dwellers still exist, in the Gulf of Maricaoibo, to these regions of the Florida and more southern shoals, a people who, finding it difficult to penetrate the then interminable morasses of the mainland, to contend successfully with foes who lurked beyond or to maintain a comfortable existence amid the swarm of insects that hover over that tropical island, reared houses on piles over coral and shell reefs out there in the waters, built gradually for themselves firm foundations and embankments to protect them from the fierce hurricanes of those seas, and thus, struggling together for ages and ages in a sea teeming with food and resource, became a

vast people and wrought out as it were with tooth and nail, tools of teeth and shells alone—the beginning of a civilization which ultimately spread far to the northward, influencing the Mound Builders and their arts (quite likely, indeed, giving rise to the mound-building habit), and from similar centres in the South spreading also over the peninsula of Yucatan, and there furnishing ready-made arts and giving further rise to a splendid old civilization that has puzzled the keenest minds, but which in the light of these new finds we may look upon, I think, as the perfected product of an original sea environment.

"Certainly, in the great shell mounds of these keys, when considered in connection with the serpent-pillared wood and stucco buildings of the early Indians of the Gulf States, already described, there is more than a suggestion of the ground plans (and of the origin of) the flat-topped pyramids, chambered stone and stucco temples, serpent-pillared porticos and other pyramids, of the ruined cities of Yucatan.



PICTURES ON CLAM SHELLS.

"But all these indications will be made more evident and clear in the detailed study of our collections, maps and illustrations,

which, as a volume of the Pepper-Hearst expedition, Major Powell has generously consented to publish as a joint work of the Bureau of American Ethnology and the University Archaeological Association.

"Unquestionably the particular water-court we investigated and the surrounding shell settlements at Marco were many centuries old. The condition and character of the remains we found, the great accumulation of slowly deposited muck which covered them, and the growth of miles of mangrove swamps and tide-made sandbars since these massive shell islands were built, all contribute to prove this point.

"Thus our finds were prehistoric, locally of the Shell Age, but in a period corresponding to the vague Age of Stone elsewhere.

"The determination of the true character of these heaps of shell, hitherto regarded as accumulations of the refuse of rude savage feasts, suggests the belief that shell heaps the world over were not always such as they have seemed, and that in many portions of the earth man has passed through a similar phase of life and culture-growth like this of the keys, a veritable shell and tooth age phase, we may call it, the traces of which will yet be found widely distributed throughout many other tropical and subtropical shore lands in the Old World no less than here in the New.

A NEOLITHIC BURIAL GROUND.

The discovery at Worms of a burying ground belonging to the later stone age, by Dr. Koehl, the conservator of the Paulus Museum there, is, in view of the rarity of such graves, an important archaeological event, says the London Standard. Up to the present about seventy graves have been examined, or only a part of this burying ground of neolithic man, and already the number of the vessels found, most of them

very tastefully ornamented, exceeds one hundred. Not the slightest trace of a metal has as yet been discovered in the graves; on the other hand, the presence of arm-rings of blue and gray slate is curious. In the most recently opened graves of women three arm-rings made of slate were removed from the upper arm of one skeleton, four from that of another, and six from the lower arm of a third skeleton. In a man's grave there was on the neck of the skeleton a small conically polished ornament of syenite, not perforated, but provided with a groove for the string. The other ornaments from the graves consist of pearls, mussel shells made in the form of trinkets, perforated boars' tusks and small fossil mussels. These ornaments were worn by men and women alike. There existed, according to this, every kind of ornament, in that time of want to metal, made of stone, mussels and bones. Ruddel and ocher fragments, which were used for tattooing and coloring the skin, are also frequent.

In hardly a single case was there missing from the women's graves the primitive cornmill, consisting of two stones, the grinding stone and the grain crusher. The men's graves contain weapons and implements, all of stone, with whetstones and hones for sharpening purposes. They consist of perforated hammers, sharpened hatchets, axes and chisels, as well as of knives and scrapers of flint. That there was no want of food is shown by the many vessels, often six or eight in one grave, and the remains of food found near them, the latter being bones of various kinds of animals. Several successful photographs have been taken of the skeletons as they lie in the graves with their belongings, so that their appearance after a repose of thousands of years can be preserved for all times. Especial value may be attached to these remains, and particularly to the skulls, of the successful recovery of which Prof. Virchow has already been apprised.—Scientific American.

HEMATITES.

Although widely distributed, but little can be said as to the uses to which objects of hematite were put. An axe, a paint stone and possibly a celt are readily understood, but what shall we say of the cone, plummet and oval or egg-shaped forms? MacLean, Foster and others speak of them as fishnet or line sinkers; but surely we cannot conceive of their being put to such service. An ordinary notched pebble would serve better and could be more readily replaced if lost. The term plummet is suggested by the form, but it is hardly true that they were used as such. Some one suggested that they were charm stones—carried by the shaman in his medicine sack.

A very few ornaments—perforated like those of slate—have been found. They are exceedingly rare. Axes, mostly small, are found in Missouri, Arkansas and Illinois now and then; but they are not a common type. In the Ohio Valley, while cones, egg-shaped, plummet and celt forms occur; there are no axes or ornaments. In the extreme East, West or South there are found scarcely any hematites.

Naturally, hematites divide themselves (on form) into eight classes:

The Celt, for cutting, scraping and smoothing.

The Axe, (grooved), for hewing and cutting, pounding, etc.

The Cone, use unknown; probably ceremonial.

The Plummet, use unknown, probably ceremonial.¹

The egg-shaped, use unknown; probably ceremonial.

The egg-shaped, with flattened base, use unknown, probably ceremonial.

The perforated ornament for suspension.

The Paint Stone, for painting.

In my illustration figure A represents an

¹The Mound-Builders, Page 163. The author, J. P. MacLean, classes plummet-shaped hematites as net-sinkers.

Notes on Ohio Archaeology, by Gerard Fowke, Page 47.

"Hematite was sometimes chipped into form,

ornament from Missouri, half-size. It is one-third of an inch thick. Specimens are very rare; B shows the typical flattened cone from Ohio or West Virginia; C is the cone form and is often found in the hematite belt; D gives students an idea of the common hematite celt, full size; E is a side view of a celt; the face is rounded (F), and the back (G) is sharply beveled off near the edge. This type is somewhat unusual and is found mostly in the Ohio and Missouri Valley; H is a fine plummet, shown full size; a beautiful and graceful relief. No archaeologist can justly classify such a work of art (made of exceedingly hard material) as a mere net sinker. (I) is an ax from Missouri and is two and one-half times larger than illustration; J is a side view of the same. Surface hematite being found in larger fragments in Missouri and Arkansas accounts for the finding there of large grooved axes. They do not occur in other parts of the country, save where brought from a distance, and even such cases are exceedingly unusual. K shows the common form of ungrooved plummet or egg-shaped pattern.

As to the small celts, Mr. Fowke observes:

"These implements were probably used as knives or scrapers, being set into the end of a piece of antler, which may in turn have been set into a larger handle of wood. That some were knives is shown by the edge, which is dulled to a flat, polished surface, extending from side to side; and that many were scrapers is shown by their celt-scraper shape, a half elliptical section, or by the scraper form edge. * * * Some, however, have the edge symmetrical, as in the hatchet-celts."²

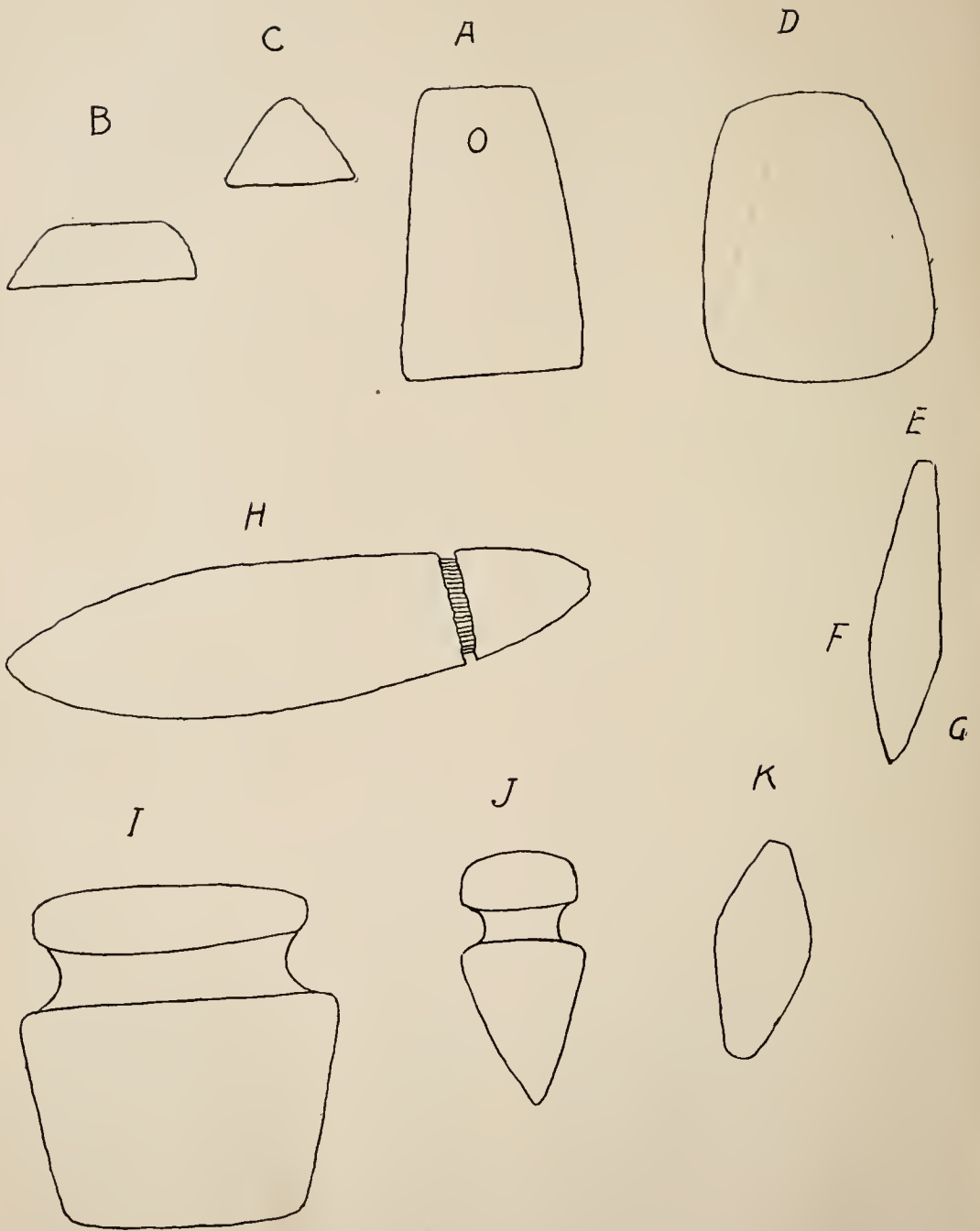
General G. P. Thurston says³ (referring to cones and plummets): "They are too exact in form, and well finished, and most of them are too pointed for practical use as mullers. They also show no evidence of abrasion or grinding at the apices or points. The round top specimens are rare,⁴ and show no signs of rubbing.

but usually ground, the powder being used for paint."

²Bureau Ethnology Report; 1891-2, Page 87.

³Antiquities of Tennessee, Page 289.

⁴He means rare in the South.



IMPLEMENTS OF HEMATITE.

"Akin, perhaps, to these conoidal forms, are the hematite rectangles or segments. * * * They are made of lustrous hematite, and are among the most beautiful of the specimens of polished ores. Some of them are pierced for hanging, others without holes. [Ancient monuments of the Miss. Val. Pages 206, 236-7. Squeir and Davis classed them with the perforated tablets.]"

Dr. I. G. Yates, in a paper published in the Smithsonian Report for 1886 (Pgs. 298-305, with four plates) reviews what had been printed up to that date on the plummets. He calls them charm stones. From old Indians he obtained some information, which I present:

"I obtained the words and translation of a song which refers to this subject. The metre and music are Schú-may (or chuma); the words are in the mish-khon-a-ká, or language of the Ventura Indians. It is called su-to-wen-cush.

SONG.

Ka-yu-wa-will-le
I am going to tell
Le-le-ni-mu--stu-me-sip-posh
Uneasy my heart;
Su-mus-il. Ka-teush-wen
Charm stone I have not.
La-li-o-li-o-lwen-neu.
I am sad."

He concluded that the plummets were highly prized and religiously venerated; that to some of the longer ones feathers were tied, and that they were placed in baskets and kept in the house of the shaman.

CLARENCE LOVEBERRY.

MEXICAN INDIAN WOMEN.

The iron hand of the cruel Spaniard has so changed the Mexican aborigine that there remains little attractiveness in the present type to the ethnologist. Lacking the war-like characteristics of the Northern Indians, the peoples of Central America, after a brief contest with Spanish arms, submitted to the inevitable and became a spiritless and degenerate race. There is no record of their continuous warfare against the civilization of the white race. Every step of

progress in the North, beginning at Plymouth Rock and ending before the Golden Gate of San Francisco has been met with dogged resistance on the part of our Northern Indians. The reverse is true of South America and of Mexico in particular.

It will be seen by the illustrations presented that the Mexican Indians of to-day are veritably hewers of wood and drawers of water. While they retain to a certain extent, (and especially the Mayas of Yucatan) their original superstitions, folk-lore and religion; yet, in every other respect have they become as the poorer class of Spain.

Except in pottery and basket work they are unskilled. As to size, they are much smaller than our Northern native women. Morally, they are exceedingly low. Observing the forms of the church, they are far from being Christians at heart.

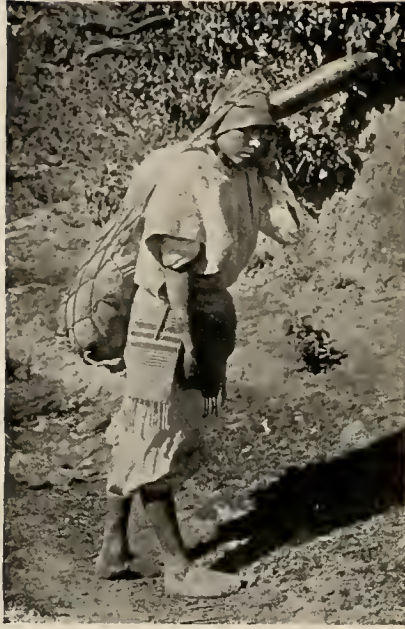
All members of the American Race south of the Cliff Dweller Country seem to have neither the strength of character nor the inclinations to resist the great evils attendant upon civilization. That which is bad is sought out and imitated, rather than the good.

The policy pursued by the various South American governments towards these Indians is different from that in vogue in the United States. There are few Indian schools and colleges, and, instead of being surrounded by the natural thrift, industry and progressiveness of the North, they have been affected by the lack of energy prevailing throughout Central and South America.

The study of these tribes must, therefore, depend upon the Spanish books and manuscripts of 200 years ago, if the student desires to gain a knowledge of the tribes inhabiting the region, and to get at the real and higher culture, (prehistoric) he must depend almost exclusively upon the archaeological explorations of to-day.

ALLISON B. DIXON.

THE ANTIQUARIAN.





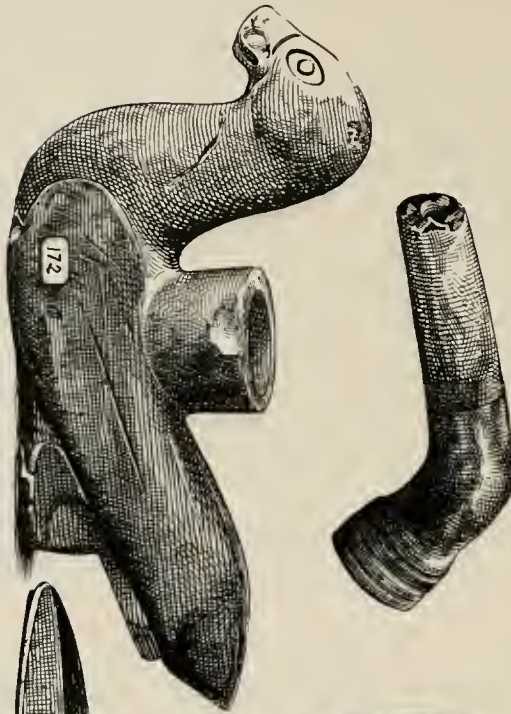


FIGURE VI.



FIGURE II

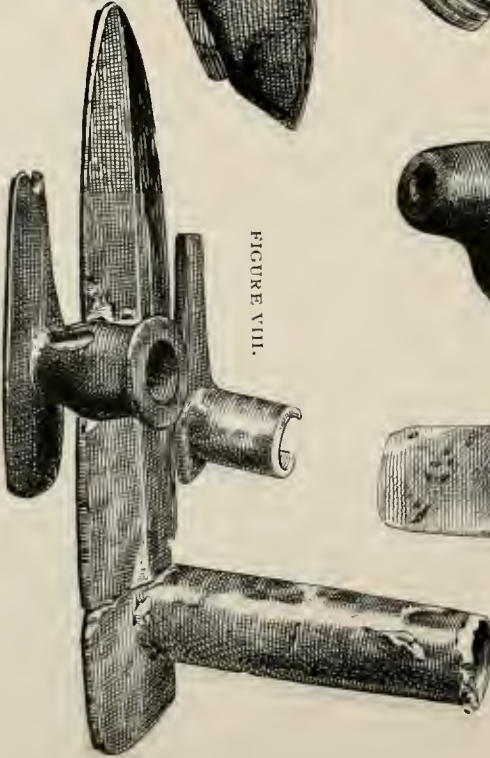


FIGURE VII.

FIGURE VIII.



FIGURE IV.

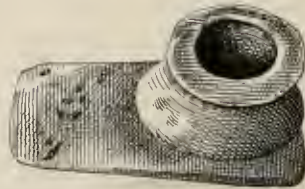


FIGURE V.

FIGURE IX.

NOTES ON A FEW PIPES.

It is not my purpose to enter into any discussion about pipes in general, but simply to describe several forms recently brought to notice.

The specimens represented in Figures 1 and 3 were found at the famous prehistoric cemetery at Madisonville, Ohio, some years ago. It will be seen that both types are somewhat rare, although Figure 1 occurs, perhaps, more frequently than Figure 3. There are not more than one or two specimens, to my knowledge, of the same character as Figure 3 in any of the museums. In most effigy pipes, the figure is nicely rounded, angles being avoided. In this specimen the bill (for it appears to be a bird) is the only real effigy part, although the eyes are delineated. The side, back, top and bottom are flat, with square corners.

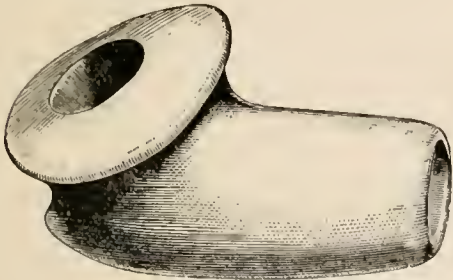


FIGURE 1. STONE PIPE, MADISONVILLE, O.

Figure 2 comes from Romney, W. Va., and is of clay. It is of long slender type, common to Western New York, and the South. Although built on the same general plan as Figure 1, it can hardly be placed in the same class. It is the only clay pipe in the series herewith presented.

Figure 4 was found in Warren County, Ohio, and appears to represent a wolf or bear. As in the case of the other three, it is small and appears to be an individual pipe, instead of one used in councils. The bowl holds a little more than a thimbleful of tobacco, and during the smoking, the

nose of the effigy is turned down. It is cut from hard, black granite.

Figure 5 is of the platform type, and was found in one of the mounds of the Hopewell group in Ross County, Ohio. Its peculiarity lies in the fact that the bowl is near the end instead of in the middle of the platform. This specimen is about two inches in height and three and a half inches long. It is at present in the Field Columbian Museum at Chicago.

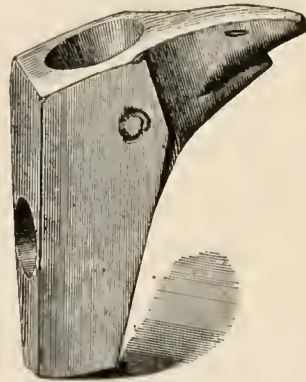


FIGURE III. STONE PIPE, MADISONVILLE, O.

Figure 6 is a large duck pipe in the possession of Mr. F. W. Parker, of Omaha, Nebraska. It is about three times the size of the illustration, and was found near Lookout Mountain, Tennessee, many years ago. It is a typical council pipe, made of dark bluish green steatite and will hold a large handful of tobacco.

Figures 7, 8 and 9 are of platform type and are shown about one-third size. Figure 9 is very rare, there being but about four or five specimens in the country. One is exhibited by the Smithsonian Institution; another by Mr. Parker. The bowl is about 7 inches in length and $1\frac{1}{2}$ inches in diameter, and would hold a large quantity of tobacco. The platform is 4 inches in width and about 14 inches long. All three of these are of granitic stone and highly polished.

WARREN K. MOOREHEAD.

HOME LIFE OF THE SIOUX INDIANS.

GEORGE E. BARTLETTE. (HUSTÉ).

Having lived for fourteen years in close contact as interpreter and trader with the Ogallala tribe of Sioux I have assumed to write an article on their daily life. I crave readers to deal leniently with me, for I am neither an ethnologist nor a writer. My chief apology for the following pages is based upon an observation that most of our Siouxan literature deals with the folk-lore and mythological side of character or is devoted to the language and to totemic divisions, or goes to the other extreme and is sensational, treating of wars and adventures. In the following pages I shall attempt to describe them in the intimate family relations as they were in 1875-1885. At that time "blanket Indians" predominated over those who were half civilized.

Since the tribes have been gathered upon reservations and put under charge of agents and commissioners, their manner of life has been gradually changing in many respects from that which characterized what may be called their wild or savage state. This paper will attempt to describe those who still adhere to as many of the old customs as their altered circumstances will allow, and have resisted so far as lies in their power the influence of the conditions under which they now exist.

THE VILLAGE SITE.

A Dakota village is invariably located upon the banks of a perennial stream, at a point convenient to a considerable amount of timber. An Indian never digs a well if he can help it; consequently easy access to running water is necessary. The wood serves a two-fold purpose; besides furnishing him with a supply of fuel it affords abundant provender for his ponies. It must be near his village, because he cannot haul it any great distance;—and because he

wants his ponies to remain close by. Cotton-wood (a variety of poplar) is his favorite; it is soft, thus avoiding much labor in the cutting, and gives out much heat in burning; while the twigs, smaller branches and bark are as nutritious as any other form of vegetation that can be found in winter. The Indian pony is the toughest and hardest of all horse-flesh; when the blizzards come sweeping across the plains cold enough to freeze the marrow in their bones, driving before it a storm of snow that quickly hides the prairie grass from sight, and soon covering it beyond their reach—then the ponies, turning tail to the blast, skurry for the protecting timber. Here they find shelter and food. The trees to a large extent break the force of the wind and intercept the snow.

The Indians cut down as many of them as may be necessary, and the ponies grow fat upon the boughs and sprouts. They frequently eat away the bark from those parts where the wood is too hard for them, and appear as contented as any old farm horse in his comfortable stall, provided with abundant food. By the next winter the trees so cut have become thoroughly dry and seasoned, thus providing an ample supply of excellent fire-wood, while a new lot is felled for the ponies when the necessity arises.

THE LODGE OR DWELLING; ITS FURNISHING.

Usually their lodges, or tepees, are constructed by setting poles in a circle, laying the tops inward until they cross, lashing them firmly together, and covering them with hides—or, at the present, when hides are difficult to procure, with canvas. Sometimes, however, when they establish a village which they wish to be permanent, or where they intend to spend a considerable time, log houses are erected, the women as well as the men taking part in the building.

These houses are quite comfortable, and their interiors are furnished with everything an Indian family deems necessary for comfort or convenience. There is never more than one room; around its sides are arranged the sleeping places—they can scarcely be called beds. They are made by fastening long poles to upright pieces with rawhide or bark, and are considered very comfortable by the inmates, who are surprised that any one should not be perfectly satisfied with them.¹ Very few articles are needed to complete the furnishing;—a kettle for cooking; some bowls, now of wood, but formerly of home-made pottery; a few spoons; a butcher knife or two; plenty of robes or blankets;—given these, nothing more is needed for convenience or comfort.

POVERTY ONLY APPARENT, NOT ACTUAL.

The wants of an Indian are limited to his needs; he is not like the white man whose needs are made to reach the limit of his wants. Nature affords to him all he thinks desirable. He wishes only to be left alone to follow his own inclinations; he does not wish to be coerced, nor will he be if he can in any way avoid it. They have for generations, perhaps for centuries, lived on the fish from the streams, the buffalo, elk and deer from the hills and plains. In securing these, they have felt the exhilarating pleasure of pursuit and capture; they have incurred the danger and hardship, and then they have experienced the exultation of the victor. The love of this life is as strong in them as is the instinct of freedom in the pheasant or wild turkey. They want no other; when the white man's way is shown them, it is repugnant; it is even abhorrent to their wild instincts.

It is not in their nature to carry on methodical, routine work; they have never done it, and should they ever be brought to the point of doing it successfully, it will be only after more than one generation of patient

instruction and endeavor on the part of those who are trying to civilize them. Yet they are not lazy, in the sense that they will, under all circumstances, shun fatigue and exposure; an Indian will lie flat upon the ground, bare-headed and half-naked, in the burning rays of a summer sun, crawling all day, if need be, through grass and sand, that he may come within the range of a bunch of antelope; he will ride all day or many days upon the trail; he will carry messages, running more miles without rest than a horse could take him in a day; he will endure cold or hunger patiently day after day, when he cannot avoid it; he will do many other things that will overtax the patience and endurance of almost any white man;—but manual labor is something he will not do, except at just such times or to such an extent as may suit his fancy. He will undertake nothing that requires continuous effort or attention when he does not feel disposed to give it. His motto would seem to be, "Eat, drink and be merry"; he will eat as long as he can swallow, regardless of the fact that his indulgence may deprive him of food for days to come. He gives no thought to the morrow. The future has no terrors for him; present satisfaction is what he is after, and if he can attain it he does so without the slightest thought for consequences. Being thus minded hospitality is, of course, one of his greatest virtues. Poor as he is; meagre as may be the furnishings or food supply in his lodge;—he is always ready to welcome a visitor, no matter though an entire stranger, giving him freely and willingly a generous supply of food, and rendering him any assistance needed, in as far as it lies in his power so to do.

ORDINARY AVOCATIONS.

Their life in the village, provided there is no business requiring especial attention, is one of elegant leisure. Rising at such time as suits their inclination, they loaf around

the lodge until the morning meal is ready; they partake of that to the extent of their capacity, and then indulge themselves in the luxury of a smoke, while resting from their exertions. Presently they begin to stroll about, visiting other lodges,—eating at every place where they may stop. Some one—either before or after breakfast, as best suits him—drives the ponies to the creek for water, provided the ponies have not made their way thither of their own accord. Should it be winter, and the ground covered with snow, young cotton-woods are cut for the ponies to browse on, and the day's work is ended.

In summer, they lie around in the shade, preparing in a deliberate, easy way, for the exigencies of the coming winter. The skins obtained in the chase are dried and tanned on scaffolds attached to their log houses, or set up around the tepees. These skins are used as beds and bed clothing, seats and rugs. Clothing is also made of them. If for the former purpose the hair is left on; if for the latter, it is often, though by no means always, removed by soaking and scraping. They can dress a deer skin so that it will be soft as fine cloth, and very white. The suits so often sent east as curiosities are usually stiff with grease and dirt, and discolored by smoke.

Their corn, when they raise any, is tied in bundles and hung up to dry before being stored away. They also dry great quantities of wild plums and "choke cherries." Meat—of the buffalo,² elk and deer—is cut in long strips and "jerked"—that is, hung on scaffolds or poles in the sun until thoroughly dried. Prepared in this way it resists decay through the winter. A favorite article of food called "Wa-sna," is prepared in large quantities from the cherries and buffalo meat. After being dried the two are pounded, separately, until they are quite fine. They are then pounded together. If

sugar is to be obtained it is stirred in. When these substances are completely mingled, the mass is stored in bladders, somewhat after the fashion in which civilized man puts up sausages. This is a delicacy, and eaten with cherry bark tea, is by no means bad to take.

DIVISION OF LABOR.

All such work as pertains to the preparation of food, care of the tepees, or attending to the little crops they raise, falls to the women. The men consider that they have enough to do in hunting or fishing. The Indian idea is that woman is too insignificant an object to be allowed much time for amusement; besides, if indulged too far this way, she might be inclined to neglect those duties which enhance the comfort or pleasure of her lord. They are brought up with the knowledge that they are expected to labor constantly; and it never occurs to their minds that they can neglect or slight any task assigned them. As a result, they are very strong and robust in middle life, until severe toil and exposure breaks them down. One will carry on her back a regular house-furnishing establishment in traveling or moving the lodge. Corn, with vessel for cooking it;—venison, and any other provisions that may be on hand; sewing materials; a wooden tub; a chopping knife; bowls for different members of the family; a baby strapped in its cradle; sometimes a dog is in the cradle, also, put there to keep the embryo warrior from getting lonesome on his journey. Occasionally the dog pokes his head up, and looks all about that he may get his bearings; then he drops back with a long breath of contentment and satisfaction at such a pleasant method of getting along in the world. The long breaths, and loud ones, too,—of the squaw are not to be attributed to the same emotions. But the women sometimes devise plans which may render their toil less

irksome, or relieve it of some unpleasant features; for instance, on one very hot day the wife and daughter of "Fire Lightning" were planting corn at their village on Wounded Knee Creek; one of them dropped the corn and covered it, while the other held a large cotton umbrella in such a way as to protect both from the burning rays of the sun.

EMPLOYMENT IN THE LODGES.

Much of the time of both men and women is devoted to the manufacture of articles for use or ornament for themselves, or to be sold to traders, tourists, or any one who will purchase. The squaws make the moccasins, most of the little trinkets and fancy work, and everything in which bead-work enters as a part. All beads so used are of glass and obtained from the whites. The men make "courting flutes," clubs, pipes, and do some carving on bone, deer hoofs, and buffalo horns. They are very patient; sometimes they will sit for hours working in a way that would be intolerable to a white man for its monotony and tedium. Some of the men do very curious as well as artistic work in the way of carving in wood, making many little toys and images for the children, while the women are really expert at making up buckskin into clothing and fancy work. The men also show much ingenuity in painting the inner or flesh side of tanned buffalo robes—exploits in the chase or on the battle-field are often vividly depicted in this manner. They also seem to enjoy working out heads for their war clubs. For this purpose they select a very hard rock, generally quartz or flint, which they peck with other hard stones until it is worked down to the desired form; this is always of an oval outline, somewhat like an egg except that it tapers uniformly from the middle to the ends, both of which are dressed to a sharp point. It is surprising how symmetrical and smooth they can make it by

such crude means. They next peck a groove around it, midway between the ends, to afford a secure hold for the handle. This is a willow stick about thirty inches long, with one end whittled thin to make it pliable; the thin end is then bent around the stone and securely tied. The whole handle, as well as that part of the stone which is encircled by it, is covered with wet rawhide, which is stretched tightly and sewed on. When the rawhide has become perfectly dry, it has contracted until the whole club is as solid as if made of one piece, and will withstand a great amount of rough usage. This is a favorite weapon, and is often quite tastefully ornamented with beads, dyed feathers or horse-hair. Tiresome as it may seem, this is only pastime to the Indian, who will spend many consecutive hours in such work.

AMUSEMENTS.

They are all, men and women alike, great gamblers; in fact, the women are even the worse of the two. Their favorite game is called "Kansukute," or "Shooting Cards." It is played with two or three packs of common playing cards. They will play for hours, staking everything they have, even to the last bowl or kettle. The agent is supposed to compel them to return all articles of household use when he learns that such have been wagered.

But the great delight of the Indian—the joy of his heart—the pleasure in contrast with which all others grow dim—is the dance. They have many forms, all having some features significant to them initiated, though not apparent to the spectator, who has not been inducted into their meaning and ceremonies.

THE SUN DANCE.

The one most important and for which they make their most elaborate preparations is the Sun Dance.

This dance is really a prominent feature

of the Indian religion, as it was in its primitive state while still unchanged by the teachings of missionary or preacher.

The time fixed for holding the dance was at the ripening of the wild sage—some time in June. No young man is a warrior or regarded as worthy of notice by his elders until he has endured its tortures; consequently with each annual recurrence there is no lack of candidates for the honors to be had from carrying out its requirements to the fullest extent.

The place for holding the dance is chosen with some care by the medicine men. The squaws then put up a large circular awning somewhat similar to a circus tent, with part of the top cut out, covering a piece of ground about one hundred and fifty feet in diameter. One of the medicine men selects a small tree, which is felled by a young squaw, who must be a virgin. After being trimmed of all its branches, it is consecrated and prayed over in regular Indian style, after which it is erected in the centre of an enclosed space. To the top of this pole, which is about twenty feet in height, are attached long thongs of rawhide, reaching nearly to the ground. Meantime, the young men who are to endure the torture and thereby show to the Great Spirit (Wa Kantan Ka) their bravery, stoicism and fitness for the duties of a warrior, have been preparing themselves for their part in the ceremony. Two small sticks of tough wood are passed beneath the skin, one on each side of the breast. To these sticks are tied the ends of a rawhide cord of such length that when the loop thus formed is drawn tight it extends to about ten inches in front of the breast; one of the thongs is tied to the loop. When all the devotees are ready, those who intend to participate in the dance—usually a large number—form a circle around them; and at a given signal the performance begins. The dancers go round

and round, keeping time to the music of a small whistle which they blow incessantly. This whistle is made from one of the wing bones of an eagle, which is held a sacred bird by the tribe.

The young men within the circle also go round the pole, making most violent efforts to tear out the flesh holding the sticks. Sometimes this is accomplished in a few minutes, at other times as much as half an hour will elapse before they free themselves; and cases have been known where, in spite of the most frantic endeavors, the sufferer is unable to gain release. He fears that his fellows will believe him unable to bear the pain of tearing his flesh; or that the great Wa Kantan Ka will deem him unworthy to become one with the warriors and hunters of the tribe. He redoubles his exertion; he falls backward with his whole force; he even runs and jumps high into the air that momentum may be added to his weight. Should the sticks still hold, owing either to being deeply inserted or to the superior firmness of the muscles, one of the medicine men comes to his rescue. Throwing himself upon the unfortunate Indian, he times his movement so that their combined weight falling at once upon the cord, tears out the sticks and relieves the neophyte.

While this is going on, other young men are pursuing a method somewhat different, yet involving the same pain and requiring fully as much fortitude. These have passed the sticks through the flesh at the upper point of the shoulder blade and attached to them the head of a buffalo; thus prepared they go dancing and jumping around the crowd, the head jerking with every motion until it finally tears loose. Perhaps, as in the case of those tied to the pole, the flesh holds in spite of their efforts. If so, a longer cord is attached, to let the skull drag on the ground. Then the medicine man jumps on it while the young man is running, and thus jerks it loose.

As soon as they have become freed, unless too much exhausted, they join the dancers; in any event, they join as soon as able. The dance continues for three days and nights; and during all this time not a morsel of food or drop of water must pass their lips, nor must one of them stop so long as he is able to stand on his feet. As soon as it is over, however, all partake of a sumptuous feast of boiled dog. Every one is expected to gorge himself until it is a physical impossibility to swallow another mouthful. Then they go into a deep sleep, which is more like the stupor of a drunken man. Hour after hour they lie motionless, their deep breathing being the only indication of life until they have slept off the effects of their rites—and their feast.

The only article of clothing worn at this dance is a breech-clout—usually a small one at that. This is often gaily ornamented with beads and ornaments made of colored horse hair and eagle feathers, while numerous horse's tails are attached to it, and dangle almost to the ground. For the rest of his apparel, he is painted from scalp-lock to toe-nails in the most fantastic manner imaginable—with every color of paint he can procure and every design or figure that his fancy can conjure.

This dance is described as it formerly existed. On account of its evil influence and the unnecessary suffering caused by it, the Government authorities have put a stop to its observance.

OTHER DANCES.

The tent, if it may be so called, in which the Sun Dance was held, was only a temporary affair, to be removed at the conclusion of the ceremony. The regular dance lodge is a round or octagonal structure, built of logs, when they can be procured. It is generally about sixty feet in diameter. The roof is of brush, covered with dirt, a large hole being left in the centre to permit the escape of smoke. The fire, which is built directly under this hole, is

made of dry wood, which gives a continual blaze, thus furnishing light to the dancers who circle around it.

In the dance called the "Omaha Dance," one of the features is the recital by the old men of the valorous deeds of their youth. At intervals the dancers stop to rest, and during this pause one of the old braves who has been sitting near the side of the lodge, rises to his feet, and addressing the assembly, relates a story of war or the chase, in which he is the hero, and in which his adversary or quarry always gets badly worsted. He invariably exaggerates greatly, to make it more exciting. When he has finished the dance begins again, with a vigor scarcely to be realized by one not familiar with it. Presently opportunity is given to some other old man to relate something of his wide and varied experience; and thus, with alternating dance and story, the time passes, often long after midnight. These dances are frequently held two or three times a week.

In all of what may be called their social dances the men wear nothing but a breech clout, although arrayed in all sorts of finery, such as feathers, painted horse hair and dyed horse-tails, with garters made of strings of bells strapped on their legs, their naked bodies being painted in as hideous a manner as it is possible to conceive. They dance to the music of a drum, no other instrument being used. Three or four men take charge of this, beating it with small sticks, having heads made of rawhide. A stranger is surprised at the great precision and regularity of the dancers; there is not the helter-skelter, awkward manner he expects to see.

The women occasionally dance at the same time as the men, but never with them. Neither do they indulge in the same free and apparently enjoyable movements. Ten or twelve women will stand in two rows, close to the side of the lodge, as far from the men as possible. They start up a song, or rather a sort of chant, to which they keep time by rising on their toes, and then dropping back on their heels—never lifting their feet from the floor. They keep this up until tired, or until the men desist, when they also must stop.

(TO BE CONTINUED.)

*EDITORIAL.**WHAT WE PROPOSE.*

Four years ago a few enthusiastic scientists commenced, in an adjoining state, the publication of a monthly journal devoted especially to promoting the study of American Antiquities and American native races, and, incidentally, to stimulating public interest in this fascinating field of inquiry. Under the title of *The Archaeologist* their efforts met with flattering approval and encouraging support. Though ably conducted and prosperous for a time, it finally was compelled to succumb to the stress of prevailing business depression that has stagnated the channels of commerce and wrecked many far-stronger enterprises. Its brief life, however, was not barren of results. And its enforced suspension left a void in the curriculum of periodical literature that its patrons desired should again be filled. Notwithstanding the fact that the stringency of financial affairs has not yet been relieved, hopeful confidence of speedy relief has inspired a general expression from a large class of our people engaged in the study of the natural history of Man, and particularly in the investigation of the origin and characteristics of the mysterious race, or races, of men who inhabited the western hemisphere before the beginning of written history, demanding the renewal of the experiment of continuing the publication of a periodical adapted to that want.

The scientific journals of high excellence, in our country, in this department of learning, are, because of their high price, or exclusive features, in many instances, inaccessible to students of moderate means, and are consequently limited in their benefits and usefulness.

The need indicated is a monthly publication specially in the interest of every phase

of research regarding Primitive Man in America, and study of our indigenous Indian tribes both ancient and recent; serving as a medium of exchange and interchange and discussion of views and opinions of delvers in this science; as well as a compendium of ascertained knowledge, and record of explorations and discoveries, furnished at a price so low as to place it in the reach of all.

Under the title of *The Antiquarian*, we offer to the working, thinking, investigating public a monthly magazine designed to occupy this field, and to fill this void in current Science Literature to the best of our ability.

It will be the aim of the management of *The Antiquarian* to endeavor to place it on the level of the leading science publications of our country, and to maintain it as a first-class periodical in every respect. There is no thought of pecuniary profit in this venture. If it can be made self-sustaining, its business success will be fully attained. While its chief object will be the development of all facts and sources of information bearing upon the first introduction of Man on this hemisphere, and his migrations, languages, physical and mental traits; social relations and religious ideas; his arts and methods of life; in a word, the study of the Natural History of Aboriginal Man and his descendants in America, due attention will be paid to the progress of these studies in all parts of the world; and our readers will be fully advised of all recent discoveries in archaic life, so far as they are known; and of the views of leading scientists of the Old World as well as our own. The interests of collectors of antiquarian relics will not be neglected; and due attention will be called to art remains of genuineness and value.

Reports and accounts of Ethnological and Archaeological collections of our large museums, from time to time, will be

one of the attractive features of this journal; and full and fair reviews of all new books and monographs on subjects in the domain of our specialty will be one of our prominent departments. We are determined to make of this journal a substantial and permanent success. To accomplish our own exalted aims and meet the approbation and expectations of a cultured, scholarly and discriminating public, we earnestly ask the co-operation and assistance of all the workers in the various departments of our scope of labor. Collectors will confer appreciated favors by sending us complete accounts of their finds; and we will be pleased to receive and publish detailed descriptions of all explorations and mound, or grave, investigations. Reports of scientific expeditions are particularly desired; and we cordially invite and urge those who have given much thought to the elucidation of the intricate problems of American Archaeology; of the inception of human life in America; the dawn and development of primitive American society; the beginning and progress of primitive arts, habits, and practices, etc., to contribute to this journal their opinions and conclusions; and utilize its pages, so far as may be convenient and practicable, as a medium for the interchange of views, discussions and criticisms.

From Hon. Wm. H. Thacker, Representative in the Washington Legislature, San Juan county, and a prominent lawyer of Friday Harbor, Friday Island, we have received a very ancient Flathead skull, found in a shell heap on Lopez Island, one of the group of islands across the sound, northwest of Seattle. The skull was discovered in making an excavation for the foundation of a salmon cannery. "The skeleton," he adds, "was also taken out, but very much decayed; and, as if buried with it, was

the skeleton of a dog." He states that shell heaps are not uncommon on those islands, and in many instances form mounds several feet in height and many yards in diameter; and that the shells composing them have all been burned. With the skull, the package contained a large lot of "shop refuse" from a pre-historic workshop found at tide-water on Jones' Beach, Friday Island, comprising many finished arrow and spear points, knives and one celt, with a profusion of broken and unfinished implements. The material of all of these specimens is a hard, fine-grained, black trap-rock.

Mr. Thacker, who has paid but little attention to Archaeology, on hearing of Indian relics having been found at that locality, says: "We walked over there one Sunday afternoon, but as the tide was up, only a couple of hundred feet of the beach was exposed; yet, in that small space we picked up several more or less perfect arrow-points, together with many broken fragments. This excited our curiosity, and not long after, we went back there at low-tide and found a number of arrow and spear-points, a good many broken ones, some of them apparently broken in making, some in all stages of manufacture; and we also found any quantity of stone chips, and, finally, the very rock from which they split the pieces out of which to manufacture the implements. This rock is not found here in out-crops; but only in small pieces. It is known here as 'Indian Knife Stone'; is very hard, fine-grained, and susceptible of a high polish. I am quite sure that it is not found in situ on these islands. While on Lopez Island a rancher showed me a piece of worked copper that he had recently found near an old Indian grave on his place. It was shaped like a fish, over a foot long, two or more inches wide and one-eighth of an inch in thickness. It must also have been brought from the far East, for no native copper is found on these islands." J. F. SNYDER.

ABOUT MARS.

The "opposition" of Mars occurred on the 17th of last month, and was observed by Prof. Lowell at the City of Mexico, and by M. Flammarion in France, and by astronomers generally. The world of science will await the reports of these observations with unusual interest with the hope that they will confirm the reasonable belief that the physical conditions of that world are, in all essential particulars, similar to those of the Earth's. There is unquestioned evidence that Mars has an atmosphere like ours, with the same meteorological fluctuations, including rainfalls, and polar accumulations of snow. The inference, therefore, is not only presumptive, but logical, that the planet is inhabited, and well fitted for supporting animal life. The dark bands encircling the red planet in different directions, first seen by Schiaparelli, and bearing his name, we are now told are artificial canals, constructed by the bucolic Martians, probably for irrigating purposes!

These facts and speculations regarding our celestial neighbor are of the utmost importance to Anthropologists, as well as to Astronomers. Has mammal life there reached its highest type in the form of anthropoid apes? Or, gone still higher up the scale of perfection to tribes of nomadic barbarians yet in the Stone Age? Have those wonderful artificial canals, thousands of miles in length, and so broad that they can easily be seen with a twenty-six inch glass, through two atmospheres and thirty-five million miles of space, been dug out with flint spades and mussel-shell scrapers? Are the Mars folks fallen angels—as we are; or, have they wings?

It is this aspect of planetary evolution and development that concerns The Antiquarian; and we will joyfully communicate to our numerous readers any new ray of light that may be cast upon these abstruse prob-

lems by the further discoveries of our great astronomers.

J. F. SNYDER.

BOOK REVIEWS.

On The So-Called Bow-Pullers of Antiquity. By Edward S. Morse, Director Peabody Academy of Science.

A publication containing many illustrations and showing not a little research both in museums and libraries. Professor Morse holds that it would be impossible to draw a bow with it; "and if a bow-puller, it would appear in ancient sculpture and painting." Neither does he consider it to have been used for any of the other purposes assigned it; as a screw driver, a cross bow implement, a curb, a spear thrower, a bit. He states that nearly all of the bow-pullers fit snugly into the hand and suggests that some of them may have been in use among chariot drivers. But he concludes that Archaeologists have not settled the problem and invites further research.

A Study of The Primitive Methods of Drilling," by J. D. McGuire. Report of the U. S. National Museum for 1894; 131 pages, numerous figures.

Nothing has been published on drilling and perforating so exhaustive as this report. Mr. McGuire has spent much time during the past ten years in experimenting with aboriginal tools, and his previous papers on pecking, grinding, polishing, etc., are known to Archaeologists and students. In reading the publication there suggests itself to the editor one point which the author does not seem to have covered. While he may use the short flint drills and perforators in making holes, did he ever attempt drilling with those long and slender specimens of flint or chalcedony, four to six inches in length, such as are found now and then in the Mississippi Valley? Could he drill with them without breaking the implement?

A Southern Archaeologist says that they, in company with the slender shell pins of similar form, were used as hair pins or head ornaments and not as drills. In venturing an opinion, the editor would state that his experience is limited and that he simply offers the above as a suggestion; that he has never been able to drill with long and slender flint objects; that they break easily and will not withstand as strong a twist as the short and thick ones of flint.

Readers of *The Antiquarian* should procure the National Museum Report containing Mr. McGuire's article. Its reading will give one a correct and extensive knowledge of primitive drilling methods, not only of North American tribes, but also of those of South America, Europe and Asia.

Thirteenth Annual Report of The Bureau of Ethnology, 1891-2; Major J. W. Powell, Director.

Papers: Pre-historic Textile Art of Eastern United States, W. H. Holmes; Stone Art, Gerard Fowke; Aboriginal Remains in Verde Valley, Arizona, Cosmos Mindeleff; Omaha Dwellings, Furniture and Implements, James Owen Dorsey; Casa Grandê Ruin, Cosmos Mindeleff; Outlines of Zuñi Creation Myths, Frank Hamilton Cushing.

One of the best publications of the Bureau. We commend it to all readers. See the February *Antiquarian* for full review.

CLARENCE LOVEBERRY.

RECENT DISCOVERIES.

A mound opened at McConnellsville, Ohio, contained three decayed skeletons. One of them was surrounded by stone slabs.

A boat-shaped ceremonial, seven inches long, with two perforations, lay below the bones of one skeleton.

Dr. and Mrs. J. Walter Fewkes and Dr. Walter Hough have returned to Albu-

querque, N. M., from a tour through the Moqui and Zuñi Indian reservations, where they have been engaged in important archaeological explorations for the Smithsonian Institute, Washington.

The results of the expedition are of great scientific value. The explorers have forwarded to the Smithsonian Institute a collection of 1,500 specimens excavated from the mounds near Windsor, Chavez Pass and the Moqui reservation.

Dr. Fewkes regards the ruins near Winslow as older than the middle of the sixteenth century; no evidence of Spanish or American influence having been found in the excavations.

A novel anthropological discovery was made recently three miles from Waynesburg, in the southwestern corner of Pennsylvania, says *Nature*. A laborer, while plowing, struck a number of stones, which proved to be graves of a character different from any heretofore discovered. Twenty vaults were found, each twenty-seven inches long, seventeen inches wide, and twelve inches deep, and each covered with a stone forty-two inches long, three inches thick, and twenty-eight inches wide at the head; thirty inches in the widest and twenty-four inches in the narrowest part. The stones were six inches below the surface of the ground. Each vault contained a skeleton of diminutive size, doubled up so as to occupy only eighteen inches of space, with the heads all in an unnatural position, and all facing the South. Under each skull was a turtle, placed as if for a pillow; and in many of the graves were skeletons of birds. The graves were arranged in the segment of a circle of almost four hundred feet in diameter. Many bone beads were found in the graves, but only one piece of metal, a small crescent-shaped copper ornament.

EXCHANGE AND WANT NOTICES.

Exchange notices pertaining to Archaeology will be inserted for subscribers at a special price of two cents per eight words each insertion. No deviation. Every person already a subscriber shall be entitled to forty words of advertising, one time, in this column, if he shall send in one new yearly subscriber.

W. E. SNYDER—NATURALIST AND COLLECTOR. Dealer in specimens representing the Fauna and Flora of Central Wisconsin. Alcoholic material a specialty. Beaver Dam, Wis.

INDIAN RELICS IN EXCHANGE FOR SKULLS (showing perfect denture) of Alligator, Shark and other specimens not in my collection. Daniel B. Freeman, D. D. S., 4000 Drexel Boulevard, Chicago, Ill. 1 f

OREGON BIRD POINTS; CURIOS FROM FLORIDA and Long Island Sound to exchange. A few arrow-heads and pottery specimens from this locality to exchange for equal value. J. Fred Powell, M. D., Stamford, Conn. 1 f

WANTED—FRESH-WATER SHELLS, MINERALS, books on Conchology, and gem stones, rough or cut. Will give Minerals, Indian relics, shells, etc. Address Charles Miller, jr., 216 Jefferson street, Grand Rapids, Mich.

FOR EXCHANGE—A large collection of Virginia and North Carolina Ancient Indian Stone Relics, for anything useful. Send list with prices of what you have to offer and stamp for drawings of my rare perfect relics. R. T. James, Vernon Hill, Halifax Co., Va.

FOR SALE—REASONABLE; FIVE OLD FLINT lock muskets, ranging in date of make from 1800 down to 1825; all in good order. Also two flint-lock, holster pistols, one 1812 and one 1841; a few relics of the late war, and two curious, old, home-made bicycles. Davis Brothers, Diamond, Ohio, Portage county. 1 f

WANTED—ANY PAMPHLET OR NEWSPAPER clipping, by L. H. Morgan. No. Amer. Review, Jan. 1870, April, 1876; Fison and Howitt's Kamilaroi and Kurnai; Stevenson's Zuni and the Zunians; Shufeldt's Indian Types of Beauty; Powell's Barbarism to Civilization; Bandelier's Montezuma of the Pueblo Indians. A. J. Marks, M. D., Toledo Ohio. 1 f

10,000 MOUND AND INDIAN RELICS IN GREAT variety. Fine Discoidals, Pipes, Ceremonials, Ornaments, Spcars, Arrow Points, Beads, etc. These relics will be sold regardless of cost. Now is the time to enrich your collection with rare relics. No catalogue. Will send drawings. G. M. Sherman, 390 Worthington street, Springfield, Mass. 12 *

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CURRENT NOTES ON ANTHRO- POLOGY.

(From Science, December 4, 1896.)

An unusually thoughtful article appears in the Bulletin of the American Academy of Medicine (Vol. LI., No. 9), by Dr. John T. Searcy, superintendent of the insane asylum at Tuscaloosa, Ala. The subject treated is insanity in the South and its relations to race were brought out prominently. Some of these may be noted.

The native American (white) when insane is more adaptable to his environment than any other stock. The American Indian is just the opposite—not at all adaptable to new conditions. Insanity is a symptom of a race—degenerating process. It is more observable in negroes since the Civil War, as compared to the condition of slavery, “degeneracy is increasing in the majority of negroes.” The whites are less so, because “during the time of slavery brain idleness and brain injury prevailed to a greater extent among the whites than at present.” Compared with his previous condition in Africa, the negro was much better off as a slave in America than he ever was before. This general improvement in his condition showed itself in the absence of mental degeneracy. His present types of insanity “show the same race traits in the hospital which they do on the outside.” That is, they are more emotional, and yet his delusions are weaker and more transient.

(From Science, December 25, 1896.)

A valuable article by Mr. A. E. Douglass appears in the Bulletin of the American Museum of Natural History for October 26. It explains the arrangement adopted by him for his extensive collection of American aboriginal relics. The aim is “to enable the student to determine with the least labor to what class any object in his possession properly belongs, and, by comparative study, to decide how it was used.”

The geographical distribution of the various forms is discussed at length, and presented at the close of the paper in an elaborate table.

Mr. Douglass calls especial attention to the need of a uniform nomenclature for American archaeology and adds, “A point has been reached when this point could and should be definitely settled,” and offers the valuable suggestion that the Anthropological Section of the American Association for the Advancement of Science should appoint a committee for the purpose.

DANIEL G. BRINTON.

Ohio now owns (preserved as state parks) famous Fort Ancient and the Northern part of the Newark Group of Earthworks. Fort Ancient Park is being beautified, washes and gullies which endangered the walls have been filled. Some three hundred acres are included in the purchase.

*CACHES OF THE SAGINAW VALLEY,
MICHIGAN.*

The entire territory draining into the Saginaw river, and along the shore of Saginaw bay, is rich in traces of a considerable habitation by a people previous to the coming of the earliest white settlers, the French traders and Catholic Fathers. Workshops where implements were made, village and camp sites, burial grounds, burial mounds, enclosures and embankments for defensive purposes, pits for the storing of provisions, etc., and caches or hoards of blades, have all been discovered in this locality, while the surface is strewn with objects made or used by man at a time before the advent of the whites. Ojibwa traditions refer to this locality as a favorite hunting ground.

Fourteen caches or deposits of chipped blades of chert have been discovered in the Saginaw valley, of which records are kept. Many may have been plowed out or discovered in other ways, and scattered without even a mention. Nine of these caches were described in a general way, in the forty-second volume of the "Proceedings of the American Association for the Advancement of Science." Since the publication of this volume, the other five of these interesting hoards of the treasures of a primitive people have been reported from the same region, making the total of fourteen caches, thirteen of which were discovered within a radius of ten miles, the ninth being the only one found outside that limit.

The blades found in caches were perhaps made at the quarries and transported to the villages, there to be stored or buried in moist earth, which kept them in a workable condition, where they could be easily obtained and worked up into the various specialized forms as such implements were required for use, or they may sometimes have been used as they were without specialization.

The caching may have been accompanied by ceremony and some of the deposits may have been made purely for ceremonial purposes; but it is doubtful if this was the case with many of them. The cache forms are often found on the adjacent village sites and the deposits in the midst of workshops where the same material was used. Two of the caches, the eighth and fourteenth, were found in moist earth.

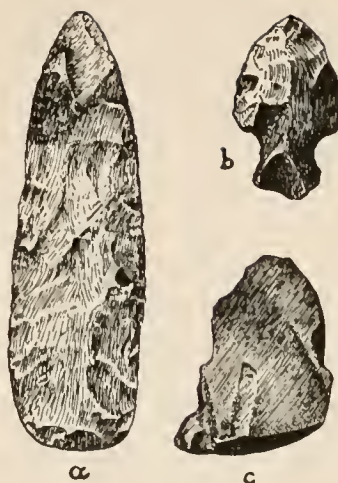
The transportation might have been by canoe in this locality, since all the caches as yet found have been near navigable water; and the material of which the blades from the majority of the caches were made



is thought to be from the chert nodules from the limestone of the sub-carboniferous series, which outcrops in a circular line, along the shore of Saginaw bay near Bay Port, through the headwaters of the Cass and Shiawassee rivers, at Jackson, etc. This outcrop is deeply covered by glacial drift throughout much of its extent. Where the rivers cut through the glacial debris and along the bay shore the rock could be readily quarried, and all of these places are in water communication with most of the village sites of the valley. The blades from eight of the caches were of a material closely resembling the chert nodules of this series.

For convenience the caches have been named, and thus associated with the locality where they were found or with the discoverer. It has been impossible to secure complete data regarding some of the caches.

First—Golson Cache No. 1 (124) consisted of 83 pieces, which were found in an irregular pile about four feet below the surface at a large village site on the west bank of the Saginaw river, just below the junction of the Tittabawassee and Shiawassee rivers. Ojibwa traditions state that in pre-historic times a great village of the Sauks was located at this place, and that the neighboring tribes, including themselves, united, invaded the valley, exterminated the inhabitants, and took possession of the land. The Green Point Mounds are two large conical mounds at the western side of the village site in which, it is related by the Indian traditioners, a part of the exterminated people were buried. The locality is rich in stone and pottery remains, and more bone implements have been found upon the surface here than in any other place in the valley. The chipped blades found in this cache were made from concretionary chert nodules. The blades are oblong and about two inches in length. Some are of the "turtle-back" shape. The cache was discovered by



Edward S. Golson while co-operating with the author in a preliminary examination of the village site. It is now in the Peabody Museum at Cambridge, Mass., to which institution it was presented, and was the first complete cache to be received by the Museum.

Second—Golson Cache No. II. consisted of 59 blades, found about one foot below the surface at the village site on the eastern side of the river directly opposite the cache just described. The specimens of this cache are leaf-shaped, average about $1\frac{1}{4}$ inches in length, and are of chert. One of the blades had been specialized, by notching, at the base. The points of two of the blades of the cache were broken off and missing, while two of the blades were broken into two parts.

Third—Frazier Cache No. I., consisting of over 300 pieces, was found about one foot below the surface at a very large village site on the south side of the Tittabawassee river near Paine's Station, about five miles above Saginaw. This village site is also mentioned in the Ojibwa traditions as being a large village, captured by the invading force. The Frazier Mound, a very large mound which contained many human skele-

tons, is supposed to have been the burial place of the unfortunate people. This mound has been entirely removed for the commercial purpose of obtaining the sand of which it was constructed. In the cache, which was located within a few hundred feet of the mound, were found four varieties of blades. First, large, black, leaf-shaped implements, about eight inches long, having a very delicate stem formed at the tip of the base by two notches, and showing concentric markings. Second, similar implements about three inches long, showing concretionary structure very plainly; the center being black and hard, the tips grading off by successive rings to a comparatively soft yellowish chert. Three specimens similar to these were found by the author in the Dilatush Mound, Warren county, Ohio, during the exploration for the World's Columbian Exposition. Similar specimens were also found by Mr. Moorehead at the Hopewell Group. Third, small yellow chert cache forms, evidently for specialization. Fourth, a few of the latter specialized by notching.

Fourth—Frazier Cache No. II. (226) consisted of one large, black, leaf-shaped implement, similar to those of Frazier Cache No. I., surrounded by thirteen rubbed stones. This curious cache was found about one foot below the surface a few feet from Frazier Cache No. I.

Fifth—Merrill Cache (125), consisting of over 100 blades, was found about one foot below the surface, near the south bank of the Tittabawassee river, about four miles above Saginaw. The specimens from this cache were of concretionary chert, resembling closely that found at the modern quarries at Bay Port, Michigan.

Sixth—Cass Cache No. I. (122), consisting of about seventy blades and a quantity of chips and flakes, was found about eight inches below the surface, near the south bank of the Cass river, at a point some three

miles above Bridgeport. The material of which these specimens were made was of a dark blue color, and entirely different from the chert found in the other caches. The blades were leaf-shaped, and about two inches long.

Seventh—Cass Cache No. II. (126), consisting of twenty-two blanks and twelve pieces of nodules of chert, of the sub-carboniferous outcrop, was found just below the surface of the soil, near the south bank of the Cass river, at a point about four miles above Saginaw. The twelve pieces of raw material lay in a pile, and the twenty-two blades were spread out near them. Chips and flakes were abundant near the cache. It is probable that this was a workshop, the raw material being piled in one place and the worked rock placed near at hand. Some of the blanks were of the "turtle-back" shape, while others had been worked on both sides. Some of the pieces of chert had been broken off in such a way that one side was flat, while the other presented the rounded outer surface of the concretion. From this form it is but a short step to the "turtle-back" form, and then to the blade having both sides worked by secondary chipping.

Eighth—Wille Cache (123) consisted of two celts and about one hundred and seventy-five chipped blades of a triangular shape, averaging $1\frac{1}{2}$ inches in length. This cache was found in a small marsh hole or periodical pond near the north bank of the Cass river, about opposite Cass Cache No. II.

Ninth—Bay Port Cache (127), consisting of one cross section of a chert nodule and forty-seven "turtle-back" blanks, was found two feet below the surface in a muck jungle about one hundred feet from the shore of Wild Fowl bay (a branch of Saginaw bay), at Bay Port. The specimens of the cache were found in a row lapping over

one another, in a manner reminding one of shingles on a roof. There is little doubt that the material of which the specimens of this cache were made was obtained within a mile of the spot, as there are within that distance numerous outcrops of sub-carboniferous rocks bearing concretions, the material of which is similar to that of the cache specimens.

Tenth—Spencer Cache consisted of seven leaf-shaped blades, of soft yellow chert, about three inches in length, and one specimen about six inches long, similar in form to the first variety found in Cache III. This specimen showed sharp concentric rings. The cache was found about three feet below the surface, on the west bluff of the Flint river, near the Ojibwa settlement of Peonagowink, about twelve miles above Saginaw. There were traces of skin wrappings and decayed wood around the cache.

Eleventh—Stewart Cache, consisting of twenty-eight blades, from one to three inches in length, was found on the east bluff of the Flint river, nearly opposite Cache X. Some of these blades were specialized.

Twelfth—Morse Cache No. I., consisting of about eleven blades, was found near the Stewart Cache.

Thirteenth—Morse Cache No. II., found upon the same farm, was similar to Cache 12.

Fourteenth—Golson Cache No. III. consisted of five turtle-back forms, of soft yellow chert. It was discovered by Mr. Fred. Golson in the Andrews' Prehistoric Workshop, at the sand ridge on the north side of the Tittabawassee river, opposite Paine's Station. The specimens were found at a

depth of about two feet in the ever-shifting, light yellow sand of the ridge. At this village site and workshop many copper beads and a copper celt have been found, besides the hammer stones, celts, pottery, arrow points and innumerable chips of chert common to such places.

Specimens from Caches 3, 4, 5, 6, 8 and Caches 7 and 14 entire are deposited in the Museum of the High School of Saginaw, E. S., Michigan.

In both the Cass Cache No. II. and the Bay Port Cache there is a peculiar blade having a straight bevelled edge on one side. It seems probable that this was formed by flaking the pieces for turtle-backs from a round concretion. The first one removed would be perfect, but after that, if the material was used without waste, each piece flaked off would have one side bevelled where its predecessor had been removed from the nodule. The specimens in these two caches were more crude, and this bevelled edge shows, while those in the other caches were further developed, and the traces of the bevel, if it existed, are wholly removed. From the relation of this material to that of the rock outcrops of easy access to the village sites where these caches have been found, it would seem that the aborigines had quarries in the valley, which it is hoped may soon be discovered and studied. That the nodules of raw material were transported is certain, as they have been found in Cass Cache No. II. far from any material of similar nature. Perhaps of most interest, however, is the large number of caches found in the limited territory.

HARLAN I. SMITH.

THE FOOD OF CERTAIN AMERICAN
INDIANS.

LUCIEN CARR.

Continued.

In preparing a field for cultivation, the first thing to be done was to clear it, and this portion of the work belonged to the men.³⁶ In a wooded region, as was the case with most of the country east of the Mississippi, and with the rude and imperfect implements at their disposal, this was no small task, and yet judging from the size of their fields and the amount of corn, etc., grown, they may be said to have been reasonably successful. With stone axes, they girdled and killed the trees, and then having burned the brush and dead wood,³⁷ they handed the field over to the women and their assistants, who broke up the ground, using for this purpose hoes made of wood, bone, stone or shell.³⁸ Having put the ground in order, they planted the corn, which had been previously soaked in water, in rows three or four feet apart, and when it reached a suitable height they hilled it up.³⁹ Once or twice during the season they went over the field for the purpose of

weeding it.⁴⁰ After this the crop was left to ripen, though a lookout was stationed on a scaffold in the field, to guard against damage from birds, animals and thieves.⁴¹ To the same end, "the mother of the family at some suitable time, when the children were asleep and the sky was overcast, divested herself of her garments and made the circuit of the field with her machicota trailing behind."⁴²

Beans were sown in the same hills with the corn; and sometimes in between the rows they planted pumpkins of different kinds, watermelons and sunflowers, though, generally, these latter were cultivated separately in patches by themselves.⁴³ This was also true of sweet potatoes and tobacco, which were started in beds specially prepared for the purpose.⁴⁴

When the corn was ripe the women and their aids and assistants gathered it, each family receiving only what was grown on its own patch. A certain amount, in the discretion of the giver, was set apart for the use of the poor and needy, for the exercise of tribal hospitality, and for defraying what may be

³⁶Lafitau, "Moers des Sauvages Amériquains," III., p. 99: Paris, 1724. La Hontan, "Voyages," II., p. 99, A la Haye, 1703. Charlevoix, VI., p. 45, Paris, 1744.

³⁷Sagard, "Voyage des Hurons," p. 92, Paris, 1865. Williams's Key, p. 176. Narragansett Club Publications, Vol. I. Adair, p. 405: London, 1775. Champlain, I., p. 113: Paris, 1830. Du Pratz, III., p. 343: Paris, 1758. Charlevoix, VI., p. 50: Paris, 1744.

³⁸For different kinds of hoes the reader is referred to Champlain, I., p. 95: Paris, 1830. Les-carbot, Part III., p. 807: Paris, 1866. Adair, p. 225: London, 1775. Williams's Key, p. 125, note p. 65, Narragansett Club Publications. Joutel, Journal in "Hist. Coll. Louisiana," p. 149. Lafitau, III., p. 69: Paris, 1724. Loskiel, "Indians of North America," p. 66: London, 1794. Hariot, in Hakluyt's "Early Voyages," II., p. 337: Edinburgh, 1889. Laudonnière, "Histoire de la Floride," p. 11: Paris, 1853. Romans, "East and West Florida," p. 119. Du Pratz, "Louisiane," II., p. 176, and III., p. 343: Paris, 1758.

³⁹Sagard, p. 92: Paris, 1865. Beverly, "Virginie," p. 205: Amsterdam, 1707. Adair, 409. Compare authorities quoted in two preceding

notes, all of whom describe the method of planting corn.

⁴⁰Beverly, "Virginie," p. 206: Amsterdam, 1707. Adair, 409. Compare Lafitau, III., p. 70: Paris, 1724. Bartram, "Travels," p. 510: Dublin, 1793. New England's Prospect, p. 79.

⁴¹Hariot's "Narrative of the First Plantation of Virginia in 1585," plate XX, London, 1893. Adair, p. 408: London, 1775. Williams's Key, p. 115.

⁴²Schoolcraft, Indian Tribes, V., p. 70.

⁴³Adair, pp. 408, 409: London, 1775. Lafitau, III., p. 70: Paris, 1724. Beverly, p. 206: Amsterdam, 1707. Hunter, "Memoirs," p. 257: London, 1824. Marquette, in "Discovery of the Mississippi," p. 33. Champlain, I., p. 96: Paris, 1830. Hariot, in Hakluyt, II., p. 337: Edinburgh, 1889. Joutel, Journal in Hist. Coll. Louisiana, p. 149. Romans, "East and West Florida," p. 84: New York, 1776. Hawkins, "Sketch of Creek Country, passim": Savannah, 1848.

⁴⁴Du Pratz, II., p. 10, and III., p. 361: Paris, 1753. Josselyn, "Two Voyages," in 3d Series, Mass. Hist. Coll., III., p. 261. Compare Beverly, p. 206: Amsterdam, 1707. Lafitau, III., p. 71: Paris, 1724.

justly termed public expenditures.⁴⁵ The rest was handed over to the owners, who arranged it in festoons along the sides of their cabins, or stored it in the tops of their houses, in caches, or in cribs and granaries.⁴⁶ Among some tribes the situation of their caches was kept secret, for they knew very well that otherwise "they would have to supply the wants of every needy neighbor as long as anything was left. This," we are told, "may occasion a famine, for some are so lazy that they will not plant at all, knowing that the more industrious cannot refuse to divide their store with them."⁴⁷ This same mistaken generosity, or practical communism of food will also account for the fact that when an Indian killed a deer or any other game, he frequently left it at some distance from his cabin and sent his wife to bring it in. She was under no obligation to

⁴⁵Previous to their carrying off their crops from the field, there is a large crib or granary, erected in the plantation, which is called the King's crib; and to this each family carries and deposits a certain quantity, according to his ability or inclination, or none at all if he so chooses: this in appearance seems a tribute or revenue to the mice; but in fact is designed for another purpose, i. e., that of a public treasury, supplied by a few and voluntary contributions, and to which every citizen has the right of free and equal access, when his own private stores are consumed; to serve as a surplus to fly to for succor; to assist neighboring towns, whose crops may have failed; accommodate strangers or travelers; afford provisions or supplies when they go forth on hostile expeditions; and for all other exigencies of the State; and this treasure is at the disposal of the King of mice." Bart-ram, "Travels," pp. 192, 510: Dublin, 1793. The Huron-Iroquois also had a public treasury in which their records were kept. It also contained wampum, corn, prisoners or slaves, fresh and dried meat, and in fact anything that might serve to defray the public expenses. See Lafitau, II., p. 202, and III., p. 247: Paris, 1724. Sagard, II., p. 261: Paris, 1865. Loskiel, p. 132. Charlevoix, V., p. 310. . . . She had two store-houses for the relief of the Needy, one of which she gave them, and desired they would leave her the other; for she had two thousand bushels of Mayz in another town which she would also give them": Herrera, V., p. 316, London, 1740. See, also, Hunter, "Memoirs," p. 292: London, 1824.

divide with every person she met; whilst with him it was a case of noblesse oblige.⁴⁸

Besides these articles which the Indian may be said to have owed to his own exertions, there were certain natural products, as e. g., wild oats, tuckahoe and koonti, of which extensive use was made, though this was limited to the times and places in which they grew and flourished. In Wisconsin, for example, the wild oats, or as we call it, wild rice, furnished, at times, a good substitute for corn and was cooked in much the same way. According to Father Marquette,⁴⁹ it grew in marshy places and ripened in September, at which time the Indians gathered it in canoes. To free it from chaff, "they smoked it for several days on a wooden lattice, over a small fire." When dried, "they put it in a bag made of skin, forced it into a hole made on purpose in the

⁴⁶Charlevoix, VI., p. 45: Paris, 1744. Lafitau, III., pp. 71, 72: Paris, 1724. Champlain, I., p. 119: Paris, 1830. Lawson, "Carolina," pp. 16, 177: London, 1718. Knight of Elvas, in "Hist. Coll. Louisiana," pp. 137, 219: Philadelphia, 1850. Sagard, p. 93: Paris, 1865. Cartier, in Hakluyt's "Early Voyages," II., p. 120: Edinburgh, 1889.

⁴⁷Loskiel, p. 68: London, 1794. Laziness may have been true of some Delawares at this time, for they had been long in contact with whites, but it was not so generally of other tribes.

⁴⁸"The custom is that of any man, in returning from his hunt, no matter how long and laborious it may have been, or how great may be the necessities of his own family, meet another just starting out to hunt, or even a little boy walking from the camp or village, he is bound to throw down at his feet and give him whatever he may have brought. It is partly to avoid the effect of this custom that the men oftentimes leave their game on the spot where they killed it, and the women are sent to bring in the meat. In other instances the hunter carries the animal on his back as far as he thinks he can without the risk of meeting men, then conceals it and goes home." Tanner, "Narrative," p. 362: New York, 1830. Compare Cadillac, in V. Margry, p. 88. Charlevoix, V., p. 171. Relation, 1611, p. 13.

⁴⁹Narrative in "Discovery and Exploration of the Mississippi," p. 9: New York, 1852. Carver, "Travels," p. 522: London, 1778. Jesuit Relation, 1663, p. 19; 1667, p. 23; 1671, p. 39: Quebec, 1858. Perrot, pp. 52, 189, 235: Leipzig et Paris, 1864.

ground and then tread it so long and well that it is easily winnowed." It is then pounded into meal, or cooked whole in water seasoned with grease, and in this shape it is almost as palatable as rice would be if prepared in the same way. Although growing most luxuriantly in the region of the upper Mississippi, it seems to have had quite an extensive range, for Flint speaks of seeing it in Louisiana,⁵⁰ Hunter tells us that it was gathered and eaten by the Osages of Southwestern Missouri,⁵¹ and Captain Smith describes something very similar as being in use in Virginia.⁵² The koonti had a more limited range and does not appear to have been known north of the Gulf States.⁵³ Laudonniere, probably, had it in mind when he tells us of a "root" which they call "hassez, and of which in times of scarcity they make bread,"⁵⁴ and in the fifth Annual Report of the Bureau of Ethnology there is an account of the "pounding, pressing and cooking" by means of which the Seminole

⁵⁰See Article in "North American Review," Vol. 28. Compare Du Pratz, "Louisiane," I., p. 317: Paris, 1758.

⁵¹"Memoirs," pp. 58, 142, 256: London, 1824.

⁵²"Virginia," p. 123: Richmond, 1819. Hariot, in Hakluyt, III., p. 342: Edinburg, 1889. Lawson, "Carolina," p. 25.

⁵³Hawkins, p. 21, speaks of it as being in use among Creeks of Georgia.

⁵⁴"Histoire de la Floride," p. 5: Paris, 1853.

⁵⁵pp. 513 et seq.: Washington, 1887. Compare Bartram, "Florida," p. 239.

⁵⁶"Virginia," p. 123: Richmond, 1819. Smithsonian Report for 1881, p. 687.

⁵⁷"They served up to us among other things a sagamity, made of a kind of root called Toque, or Toquo": Narrative of Father Douay, in "Discovery and Exploration of the Mississippi," p. 199: New York, 1852.

⁵⁸"They eat fourteen kinds of roots which they find in the prairies; . . . I found them good and sweet. They gather on trees or plants, fruits of forty-two different kinds, which are excellent; they catch twenty-five kinds of fish, including eels. They hunt cattle, deer, turkeys, cats, a kind of tiger, and other animals, of which they reckon twenty-two kinds, and forty kinds of game and birds," Narrative of Father Allouez, p. 76, New York, 1852. "They are acquainted with a great many roots and herbs, of which the general part of the English have

Indians of today free this plant from its injurious qualities, and reduce it to the shape in which it is served as broth, or make it into cakes and baked.⁵⁵ Of the tuckahoe, we first hear through Captain Smith.⁵⁶ It was plentiful in Virginia, and seems to have been known in Texas⁵⁷ and elsewhere in the Gulf States. Like the koonti root, it was poisonous if eaten raw; and to prepare it for use as food, the Indians baked it in a pit for twenty-four hours. "It grew like a flagge," we are told, "in the marshes," and when made into bread it had "the taste of potatoes."

These were some of the more substantial, as they certainly were among the more desirable, of the natural products to which, in their times and places, the Indian had recourse. The list, however, is by no means complete, for he was acquainted with a number of plants of which the white man knew nothing,⁵⁸ and there were others, like the so-called tripe-de-roche⁵⁹, ground nuts,⁶⁰

not the least knowledge": Adair, pp. 410, 412: London, 1775. "Cf." Perrot, 195, 196: Leipsig et Paris, 1864. Father Sagard, II., p. 231. Marest, in "Kip's Jesuit Missions," p. 97: New York, 1846. Heckwelder, pp. 193 and 199: Philadelphia, 1876. Relation, 1634, p. 36: Quebec, 1858. Champlain, I., pp. 101, 111: Paris, 1830.

⁵⁹This lichen grows on rocks and was frequently used in seasons of scarcity. "Il y en a deux sortes . . . Il ne faut qu' un bouillon à la première pour bouillir, et apres, la laissant un peu apres du feu, et la remuant de temps en temps avec un baston, on la rend semblable à de la colle noire. Il faut fermer les yeux quand on commence à en gouter, et prendre garde que les levres ne se collent l' une à l' autre": Relation, 1671, p. 35. "Cf." Relations, 1663, p. 18, and 1667, p. 6: Quebec, 1858. Charlevoix, VI., p. 47: Paris, 1744. Perrot, p. 52: Paris, 1864. There was a difference of opinion about this lichen as an article of food and even the same writer does not always tell the same story. Thus, for example, Father Rasle, in "Jesuit Missions," p. 31, says that "it was by no means unpalatable," and yet on p. 63 he tells us that it was "a paste very black and disagreeable."

⁶⁰This was probably what the French called "des Chapelets, pour ce qu' elle est distingué par noeuds en forme de graines:" Relation, 1634, p. 36, Quebec, 1858. "Grounds nuts as big as Egges, as good as Potatoes, and 40 on a

the bark of certain trees, etc., etc.,⁶¹ which have never been recognized in our cuisine, though there were times when the Indian was obliged to resort to them, and to even more unsavory materials, in order to give character to his otherwise tasteless broth. They also had a great variety of fruits; such as plums, persimmons, grapes and berries of different kinds⁶² of which they made liberal provision. Some of all these they ate fresh as we do, whilst others were dried, and used in winter, either as a kind of desert or as a seasoning in their bread and broth.⁶³ In this same category must be included maple sugar, and, if we may credit the Knight of Elvas,⁶⁴ wild honey, though the common honeybee is said to have been introduced into this country by the whites.

string not two ynches under ground": Gosnold, in "Smith's Virginia," p. 107, Richmond, 1819. "Cf." Harlot, in Hakluyt, II., p. 340, Edinburgh, 1889. Father Rasle, p. 59, says: "When the corn falls them, they search in the ploughed land for Potatoes." Loskiel, p. 67, says: "They likewise plant a species of pulse called ground-nuts (arachis hypogoea) because the root only is eaten. When they are boiled they taste almost like chestnuts but cannot be eaten raw." I do not know that this is the root first described, and the same may be said of the "Racines grosses comme naveaux, tres excellentes à manger, ayans un gout retirant aux cardes, mais plus agreable, lesquelles planties multiplient en telle facon que c' est merveille": Lescarbot, III., 813, Paris, 1876. Adair, p. 409; Hawkins, p. 21; and MacCauley, in "Fifth Annual Report of the Bureau of Ethnology," p. 504, speaks of a "wild" or "bog potatoe" as being an article of food among the Southern Indians.

⁶¹Eat bark of chestnut and walnut trees—dry and eat it with fat of beasts and sometimes of man": Williams' Key, p. 42. Cf. Lafitau, III., p. 84; Paris, 1724. Relation, 1634, p. 36. Sagard, p. 98, and pp. 231 et seq.: Paris, 1865. Perrot, pp. 58, 59, 194, 195, etc., speaks of what he calls "pomme de terres, ognons," etc., and describes the methods of cooking them. They were not our potatoes and onions. See, also, Hunter, "Memoirs," pp. 257, 258.

⁶²Father Marest, in "Kip's Jesuit Missions," p. 198: New York, 1846. Charlevoix, VI., p. 141: Paris, 1744. Lawson, p. 102 et seq.: London, 1718. Lescarbot, III., p. 813: Paris, 1866. Adair, p. 409: London, 1775. Williams' Key, pp. 121 et seq. Joutel's "Journal," p. 176. Capt. Smith, p. 122. Loskiel, pp. 68 et seq. Beverly, "Virginie," pp. 179 et seq.: Amsterdam, 1707. Knight of Elvas,

As to the maple sugar, however, there can be no doubt. It was made wherever the tree grew,⁶⁵ and it found especial favor as an ingredient in their preparation of parched cornmeal, or as we call it, nocake or rockahominy.⁶⁶ They also cooked corn in the syrup "after the fashion of pralines,"⁶⁷ which was a favorite dish with them, as a similar preparation is today with us; and in more recent times they also made a preserve of plums which is said to have been good.⁶⁸ Among some tribes, and in recent times, this sugar may be said to have taken the place of salt,⁶⁹ though this latter article was known to them from the earliest times.⁷⁰ Of nuts they had "a great variety and an infinite store," and besides using them as we do, they pounded them in a mortar and

passim, in Hist. Coll. Louisiana, Part II. Hunter, pp. 58, 257: London, 1824. Sagard, II., p. 230: Paris, 1865.

⁶³Father Membré, in "Discovery and Exploration of the Mississippi," p. 171. Williams' Key, pp. 121, 122. Romans, "Florida," p. 94. Bartram's (John) "Observations," p. 73. Heckwelder, p. 195. Du Pratz, II., p. 18: Paris, 1758. Narrative of Father Marquette, p. 44. Lawson, "Carolina," p. 208: London, 1718. Bradbury, "Travels in America," p. 37: Liverpool, 1817. Knight of Elvas, p. 186.

⁶⁴Hist. Coll. Louisiana, Part II., p. 148. Laudonnière, p. 9: Paris, 1853. I find no other mention of honey in the earliest writers, but "young wasps, when they are white in the combs," according to Lawson, p. 178, were "esteemed a dainty," and there were bees, other than the honey bee, found in this country which made honey.

⁶⁵Lafitau, III., pp. 140 et seq.: Paris, 1724. Loskiel, p. 72: London, 1794. Hunter, "Memoirs," p. 290: London, 1824. Beverly, "Virginie," p. 192: Amsterdam, 1707. Adair, p. 416: London, 1775. Compare Charlevoix, V., pp. 178 et seq.

⁶⁶Loskiel, p. 67: London, 1794. Lafitau, III., p. 143: Paris, 1724. Kohl, "Kitchi-Gami," pp. 318, 320: London, 1860.

⁶⁷Lafitau, III., p. 143: Paris, 1724. Joutel, Journal in Hist. Coll. Louisiana, I., p. 191.

⁶⁸Kohl, "Kitchi-Gami," pp. 318, 319: London, 1860. Cf. Heckwelder, p. 194: Philadelphia, 1876.

⁶⁹"Kitchi-Gami," p. 319.

⁷⁰Knight of Elvas, in "Hist. Coll. Louisiana," pp. 179, 194. Du Pratz, I., p. 307: Paris, 1724. Bartram's (John) "Observations," p. 45. Use the ashes "du Hicory . . . ou de quelque autre Bois ou Plante de cette nature dont la cendre eet

made them into bread or broth, or used them to mix with their hominy.⁷¹ Of some of these preparations they were extravagantly fond, as for example of their hickory milk, which Bartram⁷² tells us was "as sweet and rich as fresh cream." To make it, they first "pound the nuts to pieces upon a stone thick and hollowed for the purpose," and then "cast them into boiling water, which, after passing through fine strainers, preserves the most oily part of the liquid. It is used as an ingredient in most of their cooking, especially hominy and corn cakes," and it also furnished an agreeable drink. Sometimes they skimmed off the oil, which floated on the water in which the nuts were boiled, and kept it in gourds or

earthen pots, etc., using it as we do butter, on their bread or to give body and flavor to their broth when meat was scarce.⁷³ Sunflower seed was treated in the same way,⁷⁴ though among the northern tribes the oil made from it was not eaten, but was used on the hair.⁷⁵ Of acorns, too, they had a great abundance, which they were in the habit of making into bread or broth, having first soaked them in lye, or in successive rinsings of water in order to remove the bitter taste.⁷⁶ They were also boiled, and the oil that rose to the top was skimmed off and preserved in jars, gourds, skins,⁷⁷ etc., as was the case with the oil of walnuts and the fat of bears, buffaloes, seals and other animals.⁷⁸

(TO BE CONTINUED.)

salée," Beverly, p. 245: Amsterdam, 1707. Adair, p. 116: London, 1775. Bradbury, "Travels in America," p. 158. Per contra, among many tribes, salt was unknown or at least it is so stated. In Greeg, "Commerce of the Prairies," II., pp. 190 et seq., will be found an account of the Salines of the Arkansas: New York, 1844. Cf. Relation, 1657, p. 13: Quebec, 1858.

⁷¹Hariot, in Hakluyt II., 341: Edinburg, 1889. Knight of Elvas, passim, Hist. Coll. Louisiana. Lawson, pp. 28 and 98. Charlevoix, VI., p. 140: Paris, 1744. Narrative of Father Membré, p. 171. Loskiel, pp. 70, 71. Adair, p. 409: London, 1775. Hunter, "Memoirs," p. 257. Gookin, in first series, Mass. Hist. Coll., Vol. I., p. 150. Du Pratz, II., pp. 382, 383, tells us that the 12th and 13th months were respectively called "des chaigues Glands" and "des Noix."

⁷²Bartram (William) Florida, p. 38: Dublin, 1793. Compare Capt. Smith, pp. 122, 223: Richmond, 1819. Loskiel, p. 71: London, 1794. Romans, pp. 68, 84, 94: New York, 1776. Adair, p. 409. Lawson, Carolina, pp. 98 and 28: London,

1718. Beverly, p. 246: Amsterdam, 1707. Hariot, p. 341.

⁷³Biedma, "Hist. Coll. Louisiana," Part II., p. 101. Knight of Elvas, p. 148. Loskiel, p. 71. Williams' Key, p. 120.

⁷⁴Beverly, Virginie, p. 245: Amsterdam, 1707. Romans, "Florida," p. 84: New York, 1776. Lawson, "Carolina," p. 25: London, 1718. Hariot, in Hakluyt, II., p. 337: Edinburg, 1889.

⁷⁵Charlevoix, V., p. 240: Paris, 1744.

⁷⁶Relation, 1671, p. 35: Quebec, 1858. Lawson, Carolina, p. 45: London, 1718. Capt. Smith, p. 121: Richmond, 1819. Laftau, III., p. 83. Father Rasle in "Kip's Jesuit Missions," p. 59: New York, 1846. Laudonnière, p. 12: Paris, 1853.

⁷⁷Beverly, p. 250. Lawson, p. 45. Capt. Smith, p. 121: Richmond, 1819.

⁷⁸Du Pratz, I., p. 314, and II., p. 88: Paris, 1758. Relation, 1611, etc., p. 9: Quebec, 1858. Romans, pp. 68, 92, etc. Lawson, Carolina, pp. 44, 208: London, 1718. Adair, p. 415: London, 1775. Hunter, "Memoirs," p. 259: London, 1824.

HOME LIFE OF THE SIOUX INDIANS.

GEORGE E. BARTLETT. (HUSTÉ).

(Continued.)

THE DOG DANCE.

The Dog Dance is one to which the Indians attach great importance. Its design is to show how brave they are. A dog is killed and his heart and liver cut out. With great ceremony and mysterious actions, one of the medicine men cools these organs for a few minutes in a bucket of water. They are then hung up on the pole in the center of the dance lodge, and the Indians who are to carry on the dance form a circle around the pole and remain for a short time perfectly silent. Presently, a signal being given, one of them barks like a dog and leaps toward the pole. One by one the others follow his example until all are in motion. They fix their gaze steadily upon the meat, jumping back and fourth, and making a great din. All sorts of barking are imitated, from the snappish, squeaky effort of a young or small dog to the low, solemn growling of the largest animal. This is kept up for some time; there seems to be some restraint on them; they turn round, move from point to point and apparently are uncertain what to do. But they are not silent for an instant. All at once one of them gathers courage. Looking all about him, with horrible contortions of body and frightful grimaces, he makes a sudden bound, reaches the pole, springs up to the meat, which he seizes in his teeth, and tearing off a piece, drops back to the floor. Like a pack of wolves the others follow, and in a moment the meat has disappeared. Then ensues a chorus of growls, snarls and barking as if a veritable congress of dogs were disputing over a carcass. This is kept up until the last morsel is swallowed; then the actors mingle with spectators and the performance is ended.

DOGS.

A dog is an important adjunct to an Indian home; alive, his companionship is enjoyed almost equally with that of the human inmates of the lodge; while, after being knocked in the head, his boiled or roasted carcass is a delicious feast for which the red epicure would gladly postpone a funeral. When an Indian feels that he would like to have a dog for supper—or any other meal—and he always feels that way if the dog is fat—his squaw, holding a piece of meat in one hand and a club in the other, tempts the doomed canine to a convenient spot, and while he is wagging his tail to express gratitude for her kindness, she proceeds to pound the life out of him. If she can kill him before he can swallow the meat she is that much the gainer. As soon as he quits kicking his mouth is opened wide and a small stick three or four inches long placed between his jaws to keep them from closing; this is to allow the escape of the gas which will be generated in him by the subsequent operations. Without being cleaned in any way or having any of his internal organs removed, the animal is thrown on a bed of coals. The women and children stand around, each having a stick, with which they turn the body over and over that all parts may be equally exposed to the heat and scrape the hair off as fast as it becomes singed or loosened. When he is about half cooked he is taken off the fire and cut up in chunks about the size of a man's fist. These pieces are put into a large kettle nearly filled with water and boiled until thoroughly cooked. The meat is eaten and the soup drank with many expressions of approval and manifestations of pleasure.

A fat young puppy is the chief of all good things from an Indian's standpoint. It is not uncommon to see three dollars paid for one by a man who is actually in need of clothing and other necessities of life.

Dog is the standard refreshment in all their dances. When arrangements are being made for one, a dozen or more dogs are provided for the occasion by different individuals as their contribution to the festivities. These are killed and prepared in the manner described, a number of kettles being required in which to cook them. The kettles are brought in and placed near the center of the Dance Lodge, where they remain untouched until the dance is about half through. Then there is an adjournment for the feast. No matter how much the kettles may contain, all is devoured, to the last shred of meat or drop of soup.

*CHILDREN—THEIR EDUCATION.

The Sioux are remarkably fond of their children. They never whip, seldom reprove them, but allow them the fullest measure of liberty and freedom in everything. Especially is this the case in their treatment of boys. The girls, while treated in the kindest manner, are not considered worth much care or attention and little trouble is taken with them. Great pains, however, are taken to instruct the boys in what is thought necessary to prepare them for their adult life. They are continually charged to preserve the reputation for bravery and endurance which has been established in the tribe by the great warriors who have preceded them. A mother or sister will often say to a boy, as yet scarcely large enough to hold a bow: "You must be like your father and grandfather; they were brave; their lodges were hung with the scalps of their enemies. When you are a man you must be a great man, too, and take many scalps." The medicine men also take upon themselves the task of bringing up the boys in the way they think an Indian child should go. They encourage them to practice constantly with the bow, an occupation to

which they are not at all averse, as they carry it much of the time and shoot at everything offering a fair target. They are also trained in warfare the men arranging mock battles, showing them the best methods of attack and defense, how to form an ambuscade, to take shelter behind small objects, to conceal themselves successfully, as well as to detect and defeat these maneuvers on the part of the enemy. In imitation of actual conflict, the youngsters are urged to deeds of daring and strength; one side is made to gain an apparent advantage, whereat the men shout and cheer, acting as though the combat were real. In consequence, the boys frequently get very much in earnest and occasionally one is badly hurt; either he bears it like a man and tries to retaliate upon some other boy, or if his hurt be severe enough to quench his martial instinct for the time being, goes to his mother for consolation. There he is praised and petted for his heroism until he feels greatly honored by having a wound to show as evidence that he was in the thick of the fray. Some pretend to fall dead; others to be so desperately injured that they are unable to rise; they are hastily removed to prevent the enemy getting their scalps. Prisoners are taken and are carried off to be burned or otherwise tortured. All the preliminaries are gone through with in due form, and the more serious features simulated. In this way the boys learn to be warriors; all that the average Indian thinks that life holds out as worthy his attention. The little fellows enter into the spirit of the performance with an ardor and earnestness that must be very gratifying to the instructors. When preparations are being made for a scalp dance, the boys will adorn themselves with all the fantastic finery they can lay hold of. They will walk round and round the poles on which the scalps are hung and have the brave to whom they be-

*NOTE—It must be borne in mind that I am writing of the Sioux of twenty years ago.

long tell over and over again all the particulars of the affray in which he secured them. In rapt silence they listen to his narrative, and when he has done will murmur at their evil fortune in not being able to go out with the war parties and return victorious, loaded with scalps obtained by their own prowess and might. They grumble at the fate that compels them to remain inactive when so much glory and renown is to be so easily obtained; to content themselves with the shadow when the substance seems to be so easy to grasp.

With such training, it is not a matter for wonder that they are deficient in kindness. It is born in them to have no regard for suffering or distress, and all their surroundings tend to strengthen their lack of sympathy. Even their minor amusements are brutal. A favorite pastime is shooting fish. On summer days a party will collect and tramp over marsh and prairie to some well-known spot on the bank of a stream in which fish abound. Generally this is at a clump of trees whose roots project into the water from the washing away of the shore, or a point where tall rushes and sedges grow beneath a steep bank—places where fish are likely to congregate. Here the boys seat themselves, bow in hand, waiting for a fish to come within convenient distance. It is not that they want to carry the fish home, or even to eat it on the spot. Their sole wish is to have the pleasure of killing. Quiet and motionless as statues they sit, each intent on securing a greater number than any of his comrades. To look at the demure, sanctified expression on each face one would think he beheld a group who would shudder at the thought of harming any creature; but a look at the keen, restless, roving eyes would tend to shake this opinion. Small difference to the boy what sort of fish may stray within his reach—any kind is good enough to kill. Presently one comes in view some

distance away. Every muscle is instantly on a tension—every eye fixed on the unlucky swimmer. But not one makes the slightest movement until the fish is almost within reach; then the boy whose turn it is to shoot, slowly, almost imperceptibly, raises his bow, aims, lets fly his arrow, and then is heard his shout of exultation as he hauls in his game by means of a slender cord tied to his arrow; or a howl of derision from his companions as the fish darts, swift as the barb that missed it, into the tall grass on either side. Thus the day passes, and with nightfall they return to the village to boast of their deeds, which lose nothing in the telling.

Another day they will arm themselves with arrows having blunt heads. With these they shoot birds, which fall to the ground stunned, but not seriously injured. The boys carefully nurse them back to consciousness and care for them until fully revived; then their fun begins. Holding the bird carefully to prevent its escape, they pluck its feathers out one by one—the more it struggles the greater the sport. When the feathers are all removed they pull its wings off; then its legs; finally, if the poor little victim's life is not entirely extinct by this time they jerk its head off. So they continue until the birds are all gone. They will pull the claws off a kitten; they will cut a dog's tail off by inches; they will chop a fish into little pieces, or throw it into the fire just as it is taken from the water; they will catch some small animal, cut its legs off and shout with glee at its pitiful efforts to escape from them on its bleeding stumps—in short, there is no conceivable atrocity or depth of brutality of which an Indian boy will not be guilty, merely in the way of pleasure and enjoyment.

And yet they do not seem to do this from a desire to inflict pain; it never seems to occur to them that the animal, whatever it is,

suffers from their actions. A cat playing with a mouse does not mean to torture its prey, but the instinct of hunting, which is part of its nature, is gratified by repeated springs, by pretending to discover the quarry suddenly—"making believe," as the children say, that it was unaware the mouse or bird was near, and pouncing upon it as though seeing it for the first time. Some such instinct as this it is which prompts these boys to inflict such tortures; a feeling of superior strength or cunning which they wish to display; a desire to make their power felt and known, to show their mastery, to make themselves feared, and thus lead to their recognition as leaders or rulers. This disposition grows upon them, and in later years they will inflict the most unsparing cruelty, seemingly oblivious that they could accomplish the same end, sometimes more easily, by merciful means. For instance, when a buffalo has been shot down, they never think of knocking it in the head or bleeding it to death, but begin to remove the skin at once. Should it still retain sufficient life to struggle while this is being done, a butcher knife is plunged through the eye into the brain, or into the neck, severing the spinal cord. Perhaps two or three burly young men grasp its horns and twist its head over, while another deftly cuts out its tongue, not opening its mouth, as one would suppose, but cutting from the outside and taking skin and flesh along with the tongue. The more the buffalo kicks and writhes the harder they work, not taking any pleasure in the task, but going at it with a serious, determined expression, as they would at any other difficult work that must be done speedily.

COURTSHIP AND MARRIAGE.

When an Indian wants a wife he may buy her outright, or may go through a form of courtship. In the former case her older

brother fixes the price and takes the pay, usually in ponies. The number varies from one to ten, according to the purchaser's wealth; but in some exceptional cases, as when several want the same girl, the brother is not slow to comprehend the great law of supply and demand. In this method the girl's wishes are never consulted.

There are two forms of courtship; one, not often resorted to, is by means of the "lover's flute." This is made from a piece of cedar. The swain goes to the lodge of the girl and plays. Should she be willing to accept him, she comes out and joins him. They then set up a lodge of their own. Sometimes the damsel is coy and has him make several attempts; but it is not well to dally too long or he will become disgusted and transfer his affections elsewhere.

Generally, however, the "buck"—this is the common name for the men as "squaw" is for the women—watches his chance to find the girl alone or at some distance from home. He then approaches her and tries to induce her to marry him; if she is willing she joins him and there is no further ceremony; if not, he submits to her decision with the best grace he can muster and tries elsewhere. Sometimes a party of a dozen or more will waylay a girl. They will form a line. While one advances and pleads his cause the others remain at a respectful distance. Should he fail he retires and another comes forward to try his fortune. She may refuse several and take one she fancies, or she may reject all, in which event she is not further besought by any of them at that time.

There are many "squaw men" in the tribe; that is, white men who have taken Sioux women as wives. Very diverse opinions are held by the heads of families regarding this practice; some greatly prefer their daughters should marry white men;

others are violently opposed to it. The ruling motive with the former is that a white man can make them more presents. The women seem to have less respect for a white husband; but in most instances where they do marry whites it is done from choice. A white man will do many things that an Indian will not, and thereby greatly lessen the burdens of the squaws. This is naturally a great inducement to the women, for it is indeed a shiftless white man who would provide less than an Indian.

BURIAL.

The dead are rolled in blankets and placed in a box. Sometimes the box or coffin is buried, but usually it is left above the ground. It is always placed on a high hill and in a little hollow spot. The relatives weep with great outcry, at night generally, though occasionally in daylight as well, and cut their flesh with knives as an indication of their great grief. The period of mourning is about six months.

OLD-TIME REPARATION FOR MURDER.

If one Indian kills another of the same tribe in a quarrel he must, in order to save his own life from avenging friends, make a pecuniary reparation. This is effected by presenting to the relatives of the deceased robes, blankets, ponies, or other property. Their notions of the amount to which they are entitled is largely gauged by the wealth of the person making the payment. In this way Crow Dog escaped punishment for killing Spotted Tail in 1880. Since that time United States courts have taken all Indian cases in hand that have come to light.

RELIGIOUS BELIEFS.

As to their religious belief, they are firmly convinced of the existence of a Great Spirit, whom they call WaKantanKa; also of a Bad Spirit, WaKansica. They do not get the idea from the whites; it has always been their belief, and there is not one grown per-

son among them who is not fully satisfied of the existence of these spirits and of their power. They are persuaded that their medicine men can converse with the Great Spirit; and that he instructs and guides them in predicting future events and in treating the sick. No charms are worn to guard against the evil influence of the WaKansica, but they are convinced that he bodily enters into the person of anyone who is in any way afflicted; and the medicine men use a pumpkin shell, or "Wagamuha" (which is really a sort of gourd filled with pebbles to such an extent as to make a rattle) in their incantations to relieve the invalids, thinking that he can be driven out and away in this manner. They are very superstitious; consequently, are great believers in luck, signs, omens, etc., though to a less degree than some white people. As a rule, they think little of the future either of the body or soul. They live in and for the present. Enough clothing to keep him warm; a shelter from the storms; a good rifle; a hardy constitution; a skin tight as a drum head from engorgement of food—these are the limits of an Indian's ambition.

ADHERENCE TO OLD CUSTOMS.

Many of the customs, traits and ideas so far mentioned are being modified by the changed conditions under which they are now placed. But the habits and lines of thought and conduct crystalized by centuries cannot be changed in a generation. Long continued and patient must be the efforts of teachers and missionaries to bring the whole people to such an appreciation of the benefits of a civilized life that they will adopt it from choice. As yet they are strongly averse to it; the children who are sent East to school make good progress in their studies and seem bright and intelligent, but on returning to their people they soon drop into the old ways of living.

There are comparatively few of these scholars on the whole reservation who will speak a word of English if possible to avoid it. They take up again their old costumes and habits, and in a very short time present no evidence in any way of the care and labor that has been expended on them. If addressing a person who can understand their language they cannot be induced to speak a word of English; in talking to one not conversant with their dialect, however, they try very hard to make themselves understood; that is, providing some personal benefit to them is to be derived by so doing.

SCHOOLS.

The parents are extremely averse to having their children sent away to school. This is prompted, strange as it may seem, by their great affection and their unwillingness to be separated from them for even a short period. But little objection is made to their attendance at the agency schools, as this does not in any manner interfere with their family or tribal arrangements, the children being away from home only a few hours at a time. But in all cases the matter of attendance is optional with the children; they go or not, just as they please. Many of them seem to like the work. There are eight day schools at Pine Ridge Agency, each accommodating from fifty to sixty pupils; also a boarding-school which has about two hundred and fifty. The Catholics are building a large brick school-house, or Mission, on White Clay Creek, three miles below the Agency headquarters. Several missionaries are maintained on the reservation by the Episcopal Church.

PHYSICAL CHARACTERISTICS.

Lung troubles are prevalent among them and many die of consumption. Otherwise they are very hardy and sometimes display remarkable vitality. "Little Bull," a Sioux, was shot by horse thieves on the Missouri

river. Four bullets passed through his body and his right arm was broken above the elbow. In this condition he crawled forty miles to his camp, making the trip in four days. He recovered. But their physical qualities vary in different individuals, as among the whites. Some are strong and active, good runners, fond of exercise, while others are extremely indolent. Most of them are quite lively in their dances or games. In the use of firearms they are equal to the average of the whites; but no Indian has ever made such wonderful shots as were rather common among the hunters and trappers of an early day. They do not live so long as the whites, as a class; when age begins to tell upon them, the exposure they often have to undergo usually breaks them down in a short time. Still, there are occasional instances of longevity, men reaching the age of eighty years or more. These are very few. In reckoning time they always count it as so many winters.

For symmetry and physique the Sioux rank above any other Indians in the United States. The average height of a fully developed man is about five feet, ten inches; his weight about 165 pounds. The women are about five inches shorter and weigh fifteen pounds less than these figures. Many of the young women are very good-looking, with clear-cut features, full, expressive eyes, regular, well-formed features, and a bright, intelligent expression that indicates a friendly spirit. The most of them, however, and all the old women, have coarse features, and create an unfavorable impression. Much of this is due to their manner of life, and some, even among the least attractive, will be found endowed with no small amount of good, practical, common sense.

Candor compels the statement that most of the Sioux are great cowards. They fight only when superiority of numbers will en-

sure a victory without incurring too great a risk to themselves. One would rather, at any time, shoot a white man in the back or from behind a bush than to meet him in a fair fight with any sort of weapons. They themselves acknowledge that the Crow Indians are their superiors when it comes to actual fighting, and a small number of Crows will run off a large band. Of course, there are many exceptions; some of them seem absolutely devoid of fear, yet the statement holds true as a rule.

IGNORANCE OF MINERALS.

They have no practical knowledge of minerals. They have seen coal, but know very little about it. As to the methods used in making iron or steel they are entirely ignorant. They do know, however, that gold and silver are dug out of the ground and made into money which is about the limit of their information in such matters. They call silver "white iron," and gold is called "yellow iron;" while lead, or bullets, is known as "iron seed."

AUTHORITY.

The chiefs cannot exercise the power they once had, although still possessing much influence. The authority of the government is all that the tribe recognizes as entitled to control their actions. Any matter of general interest is always made occasion for a council meeting.

PONIES.

They have all sorts of ponies; some good, some bad. It would be difficult, as well as misleading, to give the average number belonging to each. Some have none; some as many as forty or fifty. One individual owns ninety, possibly a hundred.

KEEPING RECORDS.

There is not an Indian in the United States, except those who have been educated in the schools, who knows what year

he lives in. The records kept on skins by the Sioux have never any dates. Their principal use is to denote the number of horses stolen from the Crows or other tribes. This is shown by a mark shaped like the print of a horse's hoof, there being one mark for every horse secured. Sometimes the Crows and Sioux are represented as fighting; the peculiar way of wearing the hair is all the distinctive mark by which Indians of one tribe can be known from those of the other.

SCALPS.

Very few scalps are now in existence; bugs and moths have destroyed them.

HOW THEY SUBSIST.

There is but little game of any sort left on the reservation, nor anywhere near it. The streams still contain fish, which are invariably caught with hooks; no nets are used. The people subsist almost entirely upon the government rations and what they buy from the traders; some of those nearest the Agency cultivate the ground to some extent, but none are self-supporting; a few had made a good start at cattle-raising, but were compelled to kill all their stock to save themselves from starvation. They make some money by hauling government freight from the railway to the Agency, selling the hides of cattle issued to them for food and making all sorts of trinkets and little articles for sale.

GOVERNMENT ALLOWANCES.

Their rations consist of flour, bacon, sugar, coffee, corn, salt, crackers and baking powder. Once a year, in autumn, they receive their "annuity goods;" these comprise clothing, blankets, calico, muslin and numerous household goods, as cooking utensils and other small articles. In the spring all sorts of farming and gardening implements are issued. On alternate Wednesdays they receive an issue of beef.

The cattle are turned out of their pens and driven to the different camps to be slaughtered. For several nights succeeding the beef issue the Omaha Dance is kept going until a late hour; it is continued as long as food is abundant.

ATTEMPTS AT CIVILIZED LIVING.

Most of those about the Agency live in good log houses and have good stoves and some furniture. The government supplies lumber, doors, nails, etc., to those wishing to build; a few still prefer living in their lodges, or "tepees."

They do not take kindly to the clothing issued to them. A buck feels constrained and uncomfortable in "store clothes." There is not the freedom of motion that he desires. Most of them now wear pantaloons; but they often cut the seat out before putting them on. A few spring mattresses have been issued more as an experiment than for any other purpose. The Indians do not like them, on the grounds that they "cannot stretch out good on them." One old fellow for a long time was accustomed to arrange his mattress ready for sleeping and then lie down on the floor alongside and sleep there until morning.

WHISKY.

They seldom quarrel among themselves. It is very difficult for them to get whiskey, and so long as they can keep away they behave very well. The deputy marshals keep a close watch after any violators of this law, and anyone found on the reservation with liquor of any sort is promptly arrested and taken to Deadwood for trial.

LIFE IN THE AGENCY CAMP.

At the agencies the Indian men, after they have had their breakfast, stroll around from one house or lodge to another. They may visit as many as a dozen different places during the day, and never fail to eat at each place they visit. There is none of that grav-

ity and taciturnity which is so marked a feature of the dime novel Indian; on the contrary, they are great talkers and laugh heartily at remarks that to a white man would seem entirely devoid of wit. Sometimes a number of them will gather at the trader's store and spend the greater part of the day in sitting around on boxes or barrels, smoking, telling jokes and relating stories of their past life—what they have heard, seen or done. This particular feature of the "white man's way" is well suited to their inclinations. They are naturally great jokers, telling whatever they think will raise a laugh. But their jokes are almost invariably of a vulgar nature.

BUYING AND SELLING.

Very frequently the Eastern papers will have a great run of articles written by professional philanthropists and self-appointed guardians of public morality, who declaim copiously upon the outrageous extortion to which helpless wards of the nation have to submit at the hands of rascally Indian traders. If one of these high-toned reformers should attempt to deal with the Indians he would have to do just as the traders do or go into liquidation. Goods must be brought hundreds of miles by rail, hauled long distances sometimes from the railway, to the stores, and, always, a considerable portion of them given to the Indians as presents. This has to be done or they will trade with another storekeeper. Something must be added to nearly every purchase as an evidence of friendship, or "for good measure." They expect it and the dealer must conform to their mercantile ideas or lose their trade. Again, they are continually bringing in bead work, trinkets, buckskin moccasins, leggings, etc., for barter; and they frequently set a price on these articles greater than could be obtained for them in the East from a collector of curiosities. But the trader

must take them at the seller's figures. And with all this, the Indian is a keen, shrewd, bargain-hunter, the women especially so. It would be a close race between them and a calculating New England housewife as to who could get the greatest number of cents out of a dollar. Possibly these high moral pressure letter-writers devote their time, talents and energy to the good of their fellow-men without money and without price, hoping for a reward in the great hereafter; but Westerners are not so sure of their final destination, and so, to make a sure thing of it, they reward themselves while the opportunity is afforded them.

NOTES UPON THE PRINCIPAL SIOUX.

It may not be amiss to add a few remarks concerning the more noted men among the Sioux. These statements will relate more to personal peculiarities than to exploits in battle. In men as well known throughout the East as are the leaders of the Dakota nation, it is quite probable that the principal events in their lives are familiar to my readers. Therefore, I shall confine myself to a great extent to the character of the chiefs.

SITTING BULL.

Perhaps no other Indian of the Sioux tribe has acquired the reputation of Sitting Bull. He was killed December 12, 1890, while resisting arrest at Standing Rock reservation, where he lived. He was quite a brave fellow in the sense that a wild beast is brave when it is cornered and knows there is no alternative but to fight; so, when the Indian police came to arrest him, he drew a couple of Colt's revolvers and shot two or three men before they killed him. He was a prominent doctor making medicine for the Custer fight, and it was his bands who were instrumental in keeping the whites out of the Black Hills for many years. One incident regarding his life

which is not generally known may be of interest to my readers.

He once walked into the trader's store at Standing Rock with several dollars in silver for the purpose of purchasing some red flannel. There were some white men in the store from a frontier town, and wishing to have sport at the expense of the old fellow, one of them jerked the cloth away from under Sitting Bull's blanket. Instantly the ungovernable temper of the medicine man asserted itself, and he gave vent to a loud war whoop. Drawing his knife he lunged viciously at the joker, but was prevented from doing actual damage by the bystanders.

The Eastern papers picture him as a mighty warrior, leading hosts to battle, performing prodigies of valor and inciting his followers to renewed deeds of daring heroism. He was not a warrior at all, but a shaman—a priest or medicine man. His mission was to make "medicine" for the other Sioux before the beginning of a fight. When they were successful, the crafty old chief was not slow to make it known about the village that all this good fortune was to be attributed to the virtues of the "medicine" he had furnished. His following was found only among the Indians of the northern tribes; those located in the region about Pine Ridge had but little respect for him. Even in his own village, his people never accorded to him the importance to which he pretended, and to which he perhaps considered himself fairly entitled. He loved to pose as a great man; one to whose counsel and bravery the tribe owed its success in battle or on raids. He was always to be found in the lead, and his voice was always loudest in urging any measure, until the danger line was reached; then he prudently betook himself to a safe retreat. After a battle or foray in which his adversaries were worsted, he would walk over the scene and among the fallen enemy with a look of scorn

upon his features and a haughty air, as though all this were his own work; as if his unaided hand and word had brought about the victory. But, if only a pretender as a warrior, he undoubtedly possessed great skill in laying plans for others to carry out; as a wily strategist, he was very successful, and to this fact we may ascribe his ascendancy among his people; which, although far from attaining the proportions that would be inferred from exaggerated newspaper accounts, was still one of high degree. His skill in this respect gave him an advantage over his less intellectual companions and allowed him to claim and maintain in the tribe a position to which he could not otherwise have aspired.

MARPYIA LUTA (CRIMSON CLOUD, KNOWN BY THE WHITES AS RED CLOUD).

He is sixty-nine years old, and although once a great and noted chief, second to none, he has at present but few followers. He possesses rather a simple, jovial nature; thinks himself considerable of a man, and, Indian-like, desires to get all that he can out of the government. Occasionally he dons a suit of black, with hats and boots—in fact, a white man's complete outfit—ostentatiously parades a brass chain to which is attached a silver watch, and thus arrayed, struts with great complacency about the agency. All these articles have been given him from time to time by white men of the class who are impressed with awe when in the presence of such dignity and greatness. The watch is a present from Dr. T. A. Bland, a noted Washington philanthropist, and has an inscription inside one of the cases setting forth that fact, with all the necessary names and dates. He also carries a fancy cane, which he swings in an artistic manner; and as he displays himself to the gaze of an admiring crowd his face is wreathed in smiles, which, though pleasant, show that he is both conscious and proud of his superiority to those around him. His whole style and bearing carries the admonition: "You may look and admire to your heart's content; that is what I am here for. But you must not forget that I am to be treated with the utmost respect, and my greatness acknowledged." (TO BE CONCLUDED.)

SHELL HEAPS OF THE SHREWSBURY RIVER, N. J.

Time was when the inlets and creeks opening into the Shrewsbury or Navesink river were navigable far back into the country. The river itself is nothing but an inlet of the ocean; and it is hardly more than fifty years since the opening below Sea Bright, where the Hotel Belview now stands, was closed by the shifting sand of the beach. In pre-Columbian days the river level was considerably higher than at present, and this is proved not only by the traditions of the "oldest inhabitant," but by the great number of Indian shell heaps found on the banks of the gullies and ravines opening into the creeks and inlets tributary to the river. I have found the shells far back on banks and bluffs, at the foot of which there is today a brook, hardly an inch deep, while the formation of the surroundings shows plainly that there was once a stream of considerable depth and width.

Some heaps are so remotely situated that one is almost compelled to place them as far back in point of time as the "twenty-foot" sea level line.

Who knows what a careful study of the location of these heaps would disclose as regards the antiquity of the ancient inhabitants of America? If our caves disclose nothing, may not our "kitchen heaps" supply the necessary information? If we are to learn anything more concerning our Atlantic coast Indian, the knowledge will doubtless come from the study of these mounds.

Near Hopping Station, on the road from Belford to Atlantic Highlands, there is a heap with no signs of a stream other than a slight depression, which can be traced for nearly two miles to the shore. Tradition says there was once a spring within a hundred yards of the heap.

On the right hand side of the turnpike, leading from Middletown to Red Bank, anyone passing along the road can see what appears to be a snow bank, so numerous are the shells. In fact, the farmer has abandoned the spot entirely, as not even grass will grow there. This heap is fully two miles from the river, but the topography plainly shows an ancient creek at least one hundred yards wide; and the banks are still six or eight feet above the bottom lands.

Further down the river, at the Highlands, and near Claypit Creek, the heaps are found in great number; some far back among the hills, in places where nothing but shallow brooks exist, which, in pre-historic times, were doubtless deep water-courses. It is not to be supposed that the Indian loved work so well that he carried the oysters and clams on his back up these rugged ravines; the streams must have been navigable for canoes.

It is a well-known fact that the Indians from the interior made journeys to the sea-coast to obtain their supply of oysters and clams, which were dried and strung on twigs and carried back to their homes. These ground up with parched corn, dried nuts or berries and baked produced nutritious cakes.

There were two trails or paths which led from the interior to the coast. One of these started at Minnissink on Lake Hopatcong, ran through Morristown and the Springfield gap to Westfield; thence to Metuchen and the Raritan river just north of New Brunswick; from thence to Middletown, and ended at Claypit creek.

Another of these trails started at Crosswick, near Trenton, and, running through Freehold, the main street of which is part of the old trail, joined the northern trail at Middletown.

Claypit creek opens from the north into the Shrewsbury river, about one-half mile

west of the Highland Lights; and a more picturesque spot it is hard to find, with the Highlands to the north and east and beautiful "Sunset Hill" to the west. The creek, with its grassy banks and numerous gullies and ravines, was an ideal spot for an encampment, and the red man recognized the fact.

It was while roaming about in the neighborhood that I became acquainted with a resident over ninety years old, who confirmed the stories as to the ancient trail, as well as the traditions concerning the Indian method of baking clams and oysters. His authority was his father; and he directed me to a locality, where in his youth the shells were plentiful.

It was the practice of the Indians to scoop out a hollow or saucer-shaped hole in the sand and line it with seaweed; the clams or other shell fish were then put in the hole and the fire built on top; the seaweed prevented the sand from getting into the clams. I subsequently verified the fact by finding the shells in compact masses just beneath the surface and plainly showing the fire marks.

I made quite a little investigation among these shells and opened in all four heaps, but it was in the first excavation that I made my most interesting find. It was a burial heap, as proved by the finding of a skeleton beneath it, and the shells were doubtless all that was left of the funeral feast; or, perhaps, were the remains of what was placed in the grave for food on the way to the happy hunting-grounds. The heap consisted of oyster, clam, mussel and scallop shells, all showing fire marks, and was about two feet in diameter by eighteen inches deep. The skeleton lay at a depth of two feet three and one-half inches from the surface, upon its right side, with the legs drawn up as in the squatting position,

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and the hands touching the forehead. The bones were soft and broke easily. The skull was of the typical Indian type; high cheek bones, retreating forehead and heavy orbital ridges. It was evidently an old person, as there were but six teeth in the lower jaw and these were well worn down; not a double tooth was to be found, and the jaw was completely closed up.

Under the right cheek lay a hard sandstone pebble, about three inches long by two broad, one side battered and worn from use, the other side perfectly smooth. This stone does not appear to be native to the locality, which is non-glacial, but belongs to the glacial drift, and this fact, together with the fact that no tools or implements of any kind were found, would seem to indicate that the person was a stranger in the land. Tradition says that it was the custom when an Indian grew too old to travel to knock him on the head and bury him as soon as possible.

A large oyster shell lay on the hips; this may have been employed in digging the grave.

No human remains were found in the other heaps, but they were full of interest as showing the remnants of many a feast. Some of the oyster shells measured ten and eleven inches in length. In one heap I found a fragment of pottery, highly ornamented. The character of the ornamentation is such as to indicate that it was "basket" made; that is, a basket of rushes or grasses was first made and the wet clay plastered over it. The material seems to be the native clay or black marl of the locality, mixed with sand; and the curve of the fragment shows a bowl of about six inches in diameter.

I found fragments of clay pipes on the same heaps. These are all surface finds. I examined two small heaps and was rewarded by finding several bone tools. A systematic study of the region might result in some very interesting conclusions.

GEORGE H. FOUNTAIN.

It has been but a few decades since prehistoric archaeology, as a system of ascertaining facts, or a science, has been recognized as such in America; and during that time the earnest workers in its progress have been limited in numbers. Yet much has been accomplished by them already in extending our knowledge of the people inhabiting the new world prior to its invasion by Europeans and thereby correcting distorted beliefs concerning them entertained, not only by the unlettered, but by intelligent and otherwise well-educated persons.

It is a common propensity of mankind to invoke marvelous and occult agencies in explanation of the mysterious; and to attribute exaggerated powers or proportions to objects or phenomena not readily understood, where, in many instances, rational and satisfactory conclusions would follow common sense reasoning.

The mounds and other strange remains of people who were here ages before the coming of our race, and who, presumptively, disappeared without leaving written records of their history, naturally inspired, in all classes of observers, surprise tinged with awe. And the imagination unhesitatingly exalted the authors of those unique antiquities to the advanced plane of culture attained by the known builders of stupendous ruins of the old world. Consequently, the mound builders (usually written with capital M and B) were, and are yet, by many of the laity, revered as a distinct race well advanced in civilized arts, having complex civil governments and ethical forms of religion, who flourished here before the red Indian, and were, by the red Indian, a later intruder from Asia, totally exterminated.

This common tendency to color and embellish the mysteries of the "Vanished Race" frequently occurs in our newspapers, in accounts by intelligent correspondents, of human skeletons exhumed from mounds or ancient graves, evidently giants of huge proportions, from eight to ten or more feet in length, or of pigmies or dwarfs but a few feet in height.

Patient research, aided by sound judgment, has swept many of these myths away, and revealed the mound builder as he was, simply a red Indian with no culture or capacity superior to that possessed by his painted and feathered kinsman of the South, who fiercely contested the march of De Soto and his band of free-booters.

American Archaeology has yet a broad field for careful and remunerative labor. Systematic exploration and study of our antiquities by allotted districts has not yet been commenced. The classification of existing tribes of our native race by their physical and mental characteristics, ethnic peculiarities, linguistic and social affinities, etc., has by no means yet been perfected, and the relations they bear to their early derivatives are yet to be learned.

But archaeologists should not be dismayed by the magnitude or difficulties of the task confronting them. Their work has already been very fruitful; their corps of able workers is steadily increasing; their methods of research are becoming more refined and satisfactory, and the results, though not rapid or startling, are surely and substantially augmenting in value.

The people of Tennessee will celebrate the Centennial anniversary of the admission of their state into the Union by holding, at Nashville, an International Exposition for six months, commencing on the first day of next May. The buildings, exhibits

and general features of this exhibition and celebration, we are sure, will be creditable to the patriotic citizens of that great state, but not dissimilar to other local expositions occurring within the last few years. Its archaeological department, however, will be exceptionally rich in fine and rare specimens of prehistoric art, and its inspection will well repay to any archaeologist the outlay of his pilgrimage there. The Cumberland Valley and surrounding region was for an untold period of time the home and empire of the Stone-grave Indians, who seem to have made farther advances toward civilized methods and gained greater proficiency in mechanical arts, than any other branch of their race in the present limits of the United States, excepting the Pueblos. The stone coffins of that ancient people have well preserved the osseous remains and associated implements and ornaments they enclosed to yield them in our time to the votaries of science. Consequently, the private collections of relics of archaic Indian life there, and such private collections as those of Col. Hicks, Henry L. Johnson, Gen. Gates P. Thruston and others, in and about Nashville, are unsurpassed by any in this country outside of the large museums. When we are told that the collections of the State Historical Society, the private collections above named, with many others added, will constitute the display of Antiquities at the exposition, and that the eminent scholar and archaeologist, Gen. Gates J. Thruston, author of the great treatise on the "Antiquities of Tennessee," will superintend that department, it would be superfluous to offer any further inducement to readers of *The Antiquarian* to visit the beautiful city of Nashville next summer.

The favorable reception accorded the first number of *The Antiquarian* by the

public is highly gratifying, and fully confirms the opinion therein expressed, that a periodical of this character is needed to meet the rapidly increasing demand for information and advanced conclusions regarding the evidences of primitive human life on this continent. In response to the prospectus issued by the publishers but two months ago, a list of subscribers has already been received exceeding our expectations. In addition to this, several of the ablest and best-known workers in the department of learning represented by this journal, of this country, have volunteered their aid as contributors to its pages.

This encouraging, spontaneous support at once raises our enterprise from its experimental stage to that of assured success. Its initial number is perhaps not perfect, and may present crudities and defects that a short time and experience will eliminate and correct. As our work progresses, scrupulous care will be exercised to avoid errors and short-comings as far as practicable, and it will be our earnest endeavor to place before the public a first-class publication in every respect, containing monthly the latest information and soundest opinions obtainable relative to everything in the sphere of our mission. All important papers will be amply illustrated, and we expect to enlarge the journal from time to time to keep pace with increasing patronage.

Our chief aim will be to popularize the studies and sciences with which we deal and disseminate this knowledge among the people of all classes. To this end we will avoid, so far as we can, the hyper-technical, heavy and abstruse diction usually employed in the discussion of science and use such terms and expressions as are readily comprehended by intelligent readers.

We feel that the work we have undertaken is deserving of public favor, and appeal with confidence to the general reader, the scholar, the student, the artisan and scientist, and to all who desire to extend the area of learning, to aid our efforts by their substantial support.

J. F. SNYDER.

Horatio Hale, the eminent scholar and promoter of anthropologic research, died December 29th, 1896. He was born in Newport, New Hampshire, May 3rd, 1817; graduated from Harvard in 1837 and was appointed the same year as philologist of the Wilke's Exploring Expedition. Besides his report to the United States government of his work upon this expedition in the South Sea Islands and the Northwest coast of America, he has published numerous memoirs on anthropology. He was a member of many scientific societies in both Europe and America, and in 1886 was chairman of the Section of Anthropology of the American Association for the Advancement of Science. On the death of Mr. Hale, the science of anthropology has lost one of its oldest and most able workers on this hemisphere; a man of great kindness of heart, whose encouraging words and influence have opened the way for many young men to begin valuable work in ethnology.

During the year 1897, the following course of lectures in Anthropology is being given under the auspices of Columbia University at the American Museum of Natural History, New York:

January 2d,—The Oldest Signs of Man in America. Dr. Daniel G. Brinton, University of Pennsylvania.

January 9th,—The Native Industrial Arts of the Indians of the United States.

Dr. Otis T. Mason, U. S. National Museum, Washington.

January 16th,—Art of the North American Indians. Dr. Franz Boas, Columbia University.

January 23rd,—The Organization of the Family Among North American Indians. Dr. Livingston Farrand, Columbia University.

January 30th,—Some Peculiar Peoples of Southern France. Dr. William Z. Ripley, Columbia University.

The lectures are free to applicants for tickets.

The American Folk Lore Society held its eighth annual meeting at Columbia University, New York, on December 29th, 1896. Among the papers presented were the following:

Heli Chatelain—African Life.

Alice C. Fletcher—1. Notes on Certain Early Forms of Ceremonial Expression.

2. Ceremonial Hair-cutting Among the Omahas and Related Tribes.

W. W. Newell—The Legend of the Holy Grail.

Stewart Culin—Divinatory Diagrams.

Robert M. Lawrence—The Folk-lore of Common Salt.

Harlan I. Smith—An Ojibwa Myth.

D. G. Brinton—The Psychic Origin of Myth.

Stansbury Hagar—Weather and the Seasons in Miemac Mythology.

Franz Boas—A Star Legend From the Interior of Alaska, and its Analogues From Other Parts of America.

Mr. Newell brought forward the idea that certain literary productions of recent origin may be mistaken for legends of antiquity; a warning which students of mythology should note.

Dr. Brinton held that myths, like other human inventions, may originate inde-

pendently in different regions, without contact, and be due solely to the psychic unity of man. Dr. Boas, while agreeing that this is true of certain fundamental ideas, contended that the star legend of Alaska, which is not beyond the possibility of influence by contact, presents too great a similarity, in minute detail, to other North American star myths to be so considered.

H. I. SMITH.

BOOK REVIEWS.

Prehistoric Man at the Headwaters of the Mississippi River. By Hon. J. V. Brower, St. Paul, Minn., 1895.

The Missouri River and Its Utmost Source. By Hon. J. V. Brower, Author of *The Mississippi River and Its Source*, etc. Illustrated. St. Paul, Minn., 1896.

The first-mentioned monograph, relating wholly to the department of research in which *The Antiquarian* is engaged, is a very valuable contribution to our knowledge of the archaeology and ethnology of an unfamiliar portion of our country. It is written in pleasant narrative style, and details the exploration of several mounds and discovery of numerous remains of the arts, pursuits and practices of early and unknown occupants of the region about the headwaters of the Mississippi, together with instructive accounts of its more recent and now rapidly disappearing denizens—the Sioux and Ojibway Indians.

In the author's tabulated record of the successive possessors of the Itasca basin, he places as first in the pre-glacial era, "Possibly palaeolithic Man;" then, during the glacial period, "Possibly an Esquimaux occupancy;" followed in the post-glacial epoch by the Mound Builders, who were succeeded by the Sioux, Spaniards, French, English, and, finally, the Americans. The evidences adduced of pre-glacial man and of the Esquimaux are obviously very meagre

and equivocal; and, until further verifying discoveries, must be regarded as existing in theory more prominently than in demonstration.

The pamphlet is a reprint from the *Manchester Geographical Journal*, excellently printed and profusely illustrated in the highest art from sketches and photographs, with several maps, and a fine portrait of its distinguished author as its frontispiece.

The tracing of the ultimate source of the Missouri river is a more elaborate work, embracing dissertations on the "Elements of Nature;" internal construction of the earth; first advent of man in this region; the geology, topography and history of the Missouri valley; its Indian occupancy, with definitions of local names, etc., etc. While its proper place is chiefly in the province of geography, the fourth chapter of the book, dealing with "The early appearance of man in the basin of the Mississippi," and the fifth chapter, on Indians and local nomenclature, are of special interest and value to students of archaeology and ethnology and must be very attractive to the general reader.

The eager activity of enterprising individuals within the last half-century in penetrating remote and obscure portions of the world's surface, has, it would seem, well nigh exhausted the field of geographical discoveries, save in the limits of the frozen seas encircling the poles. This spirit of adventure or thirst for knowledge is comparatively of recent growth and an impulse of the present Iron Age. We marvel that in all the centuries of military and commercial intercourse of civilized, or semi-civilized nations with Egypt and Ethiopia the sources of the Nile were utterly unknown to them and remained unknown until their secret was discovered by an Englishman as late as 1860. Equally strange is the fact

that to the teeming population of this country the sources of the Red river of Louisiana were as utterly unknown as were the fountain heads of the Nile until explored by Captain Marcy in 1852. And it was reserved until a much later period—but a few years ago—for Hon. J. V. Brower and assistants to definitely ascertain the first actual starting points of the two great rivers draining the immense hydrographic basin bounded by the Appalachian chain on the east and the Rocky Mountains on the west. And this work has been thoroughly done.

There is nothing of importance in the natural history of the Missouri valley that escaped the keen and intelligent observation of the author. The physical features of the country traversed; its geological formations; productions; distances and elevations; Indian tribes, customs and characteristics; lakes and watercourses, and indigenous fauna and flora are all treated ably and fully.

The work is well arranged, its mechanical execution first class, well indexed, with several maps, and is splendidly illustrated with many plates from photographs taken in the field by D. F. Barry. No American library can be complete without copies of these books.

J. F. SNYDER.

The Swastika, by Thomas Wilson, Curator of Prehistoric Anthropology, U. S. National Museum. (Smithsonian Report, 1894.)

A memoir of 250 pages with over 400 figures and plates. For several years Dr. Wilson has been engaged in the preparation of this important work.

An English gentleman visiting the museum, asked Dr. Wilson if the Swastika was found in America and desired to learn of the literature relating to it. To Dr. Wilson's surprise a search proved futile, and he thereupon set himself the task of

preparing a long paper upon this "earliest known symbol."

Swastikas from nearly every country on the globe, of various patterns, and made in clay or stone, copper or bronze, painted and stamped—all these he illustrated. He finds this cross in South and Central America, in the Cliff Dwellers' Land, among the Eskimo and on the bottom of ancient mounds. Whence came it and what is its interpretation? Under "Symbolic Meanings" (pg. 935) he says:

"The top of the cross is the cold, all-conquering giant, the North Wind the most powerful of all. It is worn on the body nearest the head, the seat of intelligence and conquering devices. The left arm covers the heart; it is the East Wind, coming from the seat of life and love. The foot is the melting, burning South Wind, indicating, as it is worn, the seat of fiery passion. The right arm is the Gentle West Wind, blowing from the spirit land, covering the lungs from which the breath at last goes out, gently, but into the unknown night. The center of the cross is the earth and man moved by the conflicting influences of gods and winds."

He states that the Swastika is both prehistoric and modern in America, but that in Europe it is prehistoric. He does not believe it developed independently here, but was brought over in times of antiquity.

"The Swastika" must rank above Dr. Wilson's previous writings. It is a masterly and thorough memoir, and aside from opening a new field of research, will stand as a work of reference. CLARENCE LOVEBERRY.

RECENT DISCOVERIES.

A NATIVE AMERICAN BOOK.

The Museum of Archaeology of the University of Pennsylvania has just been enriched by a gift from the Duke of Loubat

of a reproduction of the Vatican Codex, 3773, which is a native American book, made in Mexico before the Spanish conquests, and regarded as one of the most valuable relics of Mexican literature now extant.

The Vatican manuscript consists of ten pieces of prepared deerskin of different lengths, fastened together at irregular intervals by gum. The entire book measures twenty-four feet. It is folded like a fan or screen into forty-eight leaves, the ends of which are attached to a wooden cover, the whole forming an amoxtonli, a small book eight inches high, seven wide and three inches thick.

On either side the manuscript is painted on a ground of white varnish. The colors are in general well preserved and of a somber tone, like all those employed by the Indians. The binding is of fine and thin wood.

The wood of the cover is whitish, and traces of the brilliant lacquer or varnish which covered it, may still be seen.

On one of them two tickets are gummed, one with the number 3773 in the printing of the sixteenth century, while the other bears the same number in another hand. In one corner of the cover there remains a small round green stone (turquoise), of the kind used by the Mexicans in their mosaics, and a small depression in the opposite cover marks the place originally filled by a similar stone. Both of these details are faithfully copied. In the center of the cover, placed two and two in line, are four reliefs.

At first these appeared to have been made by impressions in the lacquer, but Mgr. Francis Plancarte, who has examined them with a microscope, has discovered that they are composed of a paste with which the Indians fastened precious stones in their settings, and in these incrustations there remains the impress left by the inequalities of the stone.

On the last page appears a representation similar to the signs of the Zodiac as they are printed in the common almanac, and as a whole the book bears a striking similarity to the books of China and Japan of the present day.

In Springfield, Mass., on the site of Dr. Kilroy's house, were recently found thirteen Indian skeletons. They were covered with charcoal. There were no ornaments or weapons.

Near Williamsport, Md., on the Potomac, is a good-sized mound. It was opened recently and found to contain five skeletons in a circle, face downward, with the feet toward the center. A number of bear claws were found around the neck of the largest skeleton.

AN OLD SIOUX CAVE FOUND.

Jonathan Carver, one of the first explorers of the Northwest, makes mention in one of his books of a large cave, with walls covered with Indian picture-writing, near the southern boundary of Minnesota, says a Winona, Minn., correspondent of the Boston Transcript. A Winona scientist has just located this cave, and it has been thoroughly explored. It is at Lamoille, sixteen miles south of Winona. The entrance to the cave is semi-circular, fifty feet wide and twenty feet high. Upon entering, the fact is discovered that the cave is a large room, oblong in shape. This chamber is one hundred feet long, running from side to side, and about seventy feet in width. The roof arches to a height of nearly twenty-five feet.

The walls are found to be a mass of Indian writings. Among the figures is that of a man nearly six feet long and well proportioned. A space, where the water has prevented people from marring it, is liter-

ally covered with drawings of raccoons, eagles, muskrats, beavers, rattlesnakes of all lengths, birds, buffalo heads and hosts of other animals. The pictures are beyond doubt the work of Indian tribes, mostly the Sioux, who lived in the region for centuries.

AN OREGON CAVE.

While engaged in prospecting in the hills back of the John Day river, near the mouth of Granite creek, Elmer Thornburg discovered a tunnel two and a half feet wide and five feet high, which had evidently been driven into the mountain side by the hand of man. Thornburg and two companions explored the drift and found that it extended inward for a distance of thirty feet, and terminated in a spacious chamber fourteen feet long, eight and a half feet wide, and seven feet high, excavated in a kind of black rock.

The mysterious retreat had evidently at one time been the abode of men. A huge urn-shaped vessel, which had been molded from clay or chiseled from some formation that would withstand the action of fire, stood in one corner. It had evidently been used for culinary purposes. Scattered about the floor of the chamber were a large number of peculiarly formed and decorated pieces of pottery, among them a huge mortar and pestle formed from granite. A few stone implements were also found, together with a quantity of flint arrowheads. The walls are covered with pictographs, and in an alcove was a rudely formed image, possibly intended for an idol.

Everything found in the chamber was carefully removed and will be forwarded to the Smithsonian Institution.

THE ANTIQUARIAN.

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A SHELL GORGET FROM MEXICO.

[Reprinted from the Proceedings of the Davenport Academy of Natural Science, Vol. VI.]

No class of objects from our southern mounds are more beautiful and interesting than the engraved shell gorgets. They were first seriously discussed and adequately illustrated by W. H. Holmes in his paper—"Art in Shell of the Ancient Americans."

These objects are thin, nearly circular, concavo-convex plates of shell, carefully smoothed on both surfaces and engraved upon the concave side. The shell which usually supplied the material was "Busycon perversum," which is common along the Atlantic and Gulf coasts from Massachusetts

*Sec. An. Rept. Bureau of Ethnol, pp. 178-305.

to Mexico. The form of the shell and the quality of its material are such as to make the securing of flat plates of any size quite impossible; hence the concavo-convex form of the sides is a result inherent in the material itself. The designs engraved upon the concave surface are surprisingly well done. While they are clearly ornamental, they are no less clearly symbolical as well. The types are comparatively few and the treatment is notably conventional. Holmes grouped these designs into a few classes—the cross, scalloped disk, birds' head and coil, serpent, spider, human face and human figure. These gorgets, which measure from $2\frac{1}{2}$ to 5 inches in diameter, were worn as ornaments, probably suspended from the neck and hanging down upon the breast. Two holes for suspension are usually found near the upper edge, and, not infrequently, show marks of wearing due to the suspension cord. The specimens have come from stone graves and mounds in Tennessee, Missouri, Illinois, Georgia and other Southern states. Everywhere in art and function they embody one well-defined conception and are plainly related.

The most interesting are certainly those upon which is represented the human figure. Of such Mr. Holmes describes four. After his paper was printed, fragments of two others were found in one of the Etowah group of mounds in Georgia, by Mr. Rogan. These were illustrated in Cyrus Thomas' paper, "Burial Mounds of the Northern Sections of the United States."** Still later, Gates P. Thurston, in his "Antiquities of Tennessee," produced all these figures, and added a description and illustration of a curious specimen belonging to A. E. Douglass, of New York City. There are thus seven of these southern gorgets, bearing representations of human figures, illustrations of which are easily accessible to the student. No two of these are exactly alike. It is not

necessary here to redescribe them, but a few points regarding each need emphasis:

(a). A curious piece, whereon the human figure is so crudely and conventionally represented that great pains are necessary to detect it at all, in what at first sight looks like a meaningless combination of lines. The joints of the arms and legs are quite unanatomical, and the feet are developed into single, well-defined talons or claws which fold upward against the knee. Perforations from one-fourth to one-sixteenth of an inch in diameter occur at several places, particularly at joints of the figure and at the junction of two or more lines. There are twenty-six of these. Tennessee.

(b). The same general idea occurs here, but the human figure is more easily recognized. The arms are curiously jointed; the hands are well-defined. There are plume-like appendages along the arms and legs. The feet are developed into single claws. From the mouth, which is well supplied with teeth, there is a nondescript appendage, "which may be part of the costume, or, since it issues from the mouth, may possibly symbolize speech." There are five perforations, including the suspension holes. Tennessee.

(c). A sacrificial scene. An upright figure in profile, decked with ornaments. With arms extended, he is advancing. Before him he holds a severed human head with face downward. His head is large, occupying one-third the height of the whole figure. The face is tattooed diagonally across the face from below the eye to below the ear. The pupil of the eye is indicated by a pit-like depression. A peculiar apron-like object hangs from a belt at the waist, and a fan-like extension of the costume, somewhat like a bird's tail, descends between the legs. A peculiar object projects from the mouth. The severed head presents face tattoo marks and the curious mouth object. Missouri.

**Fifth An.Rept.Bureau of Ethnol,pp. 103-104.

(d). Fragmentary. A remarkable piece of work. Two human figures, plumed, winged, and with feet like those of eagles, are represented in profile, facing, and engaged in deadly combat. The great wings and the many feathered tails are notable. Tennessee.

(e). Fragmentary. Two figures, one erect, the other prostrate. Both are tattooed. The victor has a zigzag line running from the root of the nose across the cheek to the neck; the other is marked with a zigzag line from the hair over the temples vertically down the face. Both wear large ear-rings, and "appear" to have the curious mouth object. Georgia.

(f). Fragmentary. Winged figure kneeling. The nose is eagle-beaked. There is a peculiar tattoo (?) about the mouth. There is an object before the mouth somewhat like those already described, but "not" actually connected with it. It appears, however, to be attached to the head-dress. There is a belt and pendent at the waist. Georgia.

(g). The Douglass tablet from Missouri presents little of great significance for our comparison. Through Gen. Thruston's politeness, it is here reproduced. Notice the belt and the suspended apron.

Of this gorget General Thruston says: *

"The very peculiar skirt or appendage hanging to the waist-belt appears in both the copper-plate figures from the Etowah mound, which had not been published in 1887 when this shell gorget was discovered. The curious complicated head-dress and long hair-tie also suggest the Georgia figures, as does the long implement or object under the right arm, which appears to be a duplicate of the object held in the right hand of the copper-plate figure. The fan-shaped scarf, hanging from the waist, appears in several of these designs. The ear-ring, the breast ornament, the large beads upon the wrists and legs, the half-circles on the arms and lips, all suggest analogies."

With the pictures of these gorgets before him, anyone at all acquainted with Mexican art must notice curious analogies. Holmes recognized similarity. Of the scalloped disks he says:

"The student will hardly fail to notice the resemblance of these disks to the calendars of Mexico and other southern nations of antiquity. There is, however, no absolute identity with southern examples. The involute design in the center resembles the Aztec symbol of day, but is peculiar in its division into three parts, four being the number almost universally used." Holmes, l. c. p. 279.

Of the bird pattern and loop pattern he remarks:

"A similar looped rectangle occurs several times in the ancient Mexican manuscripts. * * * * It is not a little remarkable that a cross occupies the enclosed area in all these examples." Holmes, l. c. p. 285.

"* * * Gorgets of shell are a marked characteristic of the personal embellishment of the northern peoples. They may have been in use among the Aztecs, but do not appear among southern antiquities, and no evidence can be derived from history. This gorget belongs, in its general character as an ornament, to the north. * * * *

In all these features, together with its technical execution and its manner of inhumation, it is identical with the well-known work of the mound-builders. These analogies could hardly occur if it were an exotic. It is true, however, * * * * that the design itself has a closer affinity to Mexican art than to that of the north. * * * * *

As an ornament, this Missouri gorget is a member of the great family that is peculiarly northern, but the design engraved upon it affiliates with the art of Mexico, and so close and striking are the resemblances, that accident cannot account for them, and we are forced to the conclusion that it must be the offspring of the same beliefs and customs and the same culture as the art of Mexico." Holmes, l. c. 305.

We have now to describe another engraved gorget of shell on which a human figure is represented. The specimen is part of the Ryerson collection, now at the University of Chicago. It was collected near Morelia, in the state of Michoacan, Mexico, by Abadiano, probably in the year 1882. It is remarkably well preserved and has been somewhat cleaned, but of its authenticity

*Antiquities of Tennessee, p. 346.



there is absolutely no question. As the United States specimens, it is a thin, concavo-convex plate. The inner, concave face, is the one carved. The gorget is nearly circular, measuring 106^{mm.} in height and 100^{mm.} in breadth. In thickness it measures from 3 to 4^{mm.} In the catalogue of the collection the design is said to represent "a warrior seated and speaking." The cut here given reproduces the object admirably. The carved figure occupies a roughly circular space at the center of the gorget. A narrow plain band surrounds this; outside of it is a broader band occupied by six flattened circular ones inclosing a small circle surrounding a pit-like depression, alternating with six ornamental motives of uncertain significance. In this band much of the shell between these designs (represented in black in the illustration) has been cut entirely out. Twenty-four such open spaces occur in this band. Outside of all is a narrower plain band. The engraved design

itself represents a warrior seated. His head is surmounted by a head-dress. The hair is well drawn; the eye is represented by an ellipse sharpened at one end with a pit-like depression for the pupil. A great ear ornament is represented with a central depression. The nose is large and connected with it is a curious mark, which may be tattooing or a nose skewer. A zigzag tattoo line runs from below the nose across the cheek to the ear. The mouth is open, the teeth of the upper jaw are indicated and a curious object projects from the mouth. The body is curiously stiff and formal. The arms are extended and the left hand grasps some object. The right one (somewhat distorted in the cut) projects beyond it to the very border of the design. The legs are extended forward. The foot is claw-like. Plumes are attached to the arms and legs. Part of a rectangular object, apparently a belt, is seen and from it in front an apron-like pendent ap-

parently projects, while, if I mistake not, a tail-like appendage hangs down below the figure, apparently after having passed between the legs. What appears to be a shield with a downward hanging fringe of plumes is on the warrior's back and over it is an object which resembles somewhat a war club although it may be an "atlatl" or spear-thrower. At several places within the design are pit-like cavities sometimes surrounded by circles. There are ten apertures cut through the shell within this area.

Many points of similarity might be found between this design and those from the United States. The stiff and formal trunk may be compared with those of (a) and (b). The claw-like foot recalls the Tennessee specimens. The curious object at the mouth is apparently in nature like that in (b), (c) and (e). The curious perforations are present in several. Tattoo markings are the rule in these designs, but those on the Mexican specimens and the Georgian piece (c) are almost identical. The belt and curious apron-like projections are comparable with those in (c) and (g).

The finding of such an object in the heart of Mexico is of much interest. Form, function, character of this Michoacan specimen are plainly the same as those of the pieces from Tennessee, Georgia and Missouri. It can no longer be said that the type is essentially northern nor that it belongs exclusively to the "Mound-builders" of the United States. We must modify Mr. Holmes' statement and may say of the Missouri gorget (c)—"it is a member of a great family, 'not' peculiarly northern." We may emphasize this other statement—"the design upon it affiliates with the art of Mexico and so close and striking are the resemblances that accident cannot account for them, and we are forced to the conclusion that it must be the offspring of the same beliefs and customs and the same culture as the art of Mexico." In fact there are greater differences between the Tennessee specimens themselves, or between the Missouri specimens alone, than there are between the United States specimens, as a class, and this Mexican gorget.

FREDERICK STARR, PH. D.

A FEW RECENT FINDS.

To close my summer field work, I made a short visit to the old Indian jasper quarry, situated on the summit of Rattlesnake Hill, in Durham township, Bucks county, Pa. During my forty years' experience in geological and archaeological lines, I have seldom failed visiting this, to me, interesting prehistoric quarry without finding something new in the line of Indian stone art.

The quarry covers an area of an acre and one-half, including the small lakelet at the east end of the excavation. It had been worked by primitive man along the outcrop of a jasper dike, thrust through the granitic formation of which the mountain is chiefly composed, by some mighty convulsions of nature occurring near the close of the Mesozoic period. That formation undoubtedly covered the locality at the time to an approximate depth of probably 1,000 or more feet, the outcrop of jasper running east and west, while the gneiss and granulite trends northeast and southwest. In a tunnel driven into the hill by the Durham Iron Company for the purpose of running the iron ore mined in the mountain by gravity to the ore dump at the foot of an incline, the jasper dike or vein was struck at a perpendicular depth from the surface of 200 feet. That this quarry was for long ages a resort for prehistoric man to obtain supplies of jasper to manufacture implements essential to an enjoyment of arboreal life is evidenced by the enormous amount of refuse material left in the neighborhood of the quarry. In quarrying, large lumps of jasper, too heavy to be moved by the Indians, were met with; these were subjected to heat through fires built about them, fracturing the lumps when heated by throwing water on them, which brought the jasper into a condition applicable for their use. The surface of the ground about the quarry, over an area of about fifteen acres, is strewn with refuse

jasper, chalcedony, so-called rejects, broken hammers of stone of every description and size. But very few finished implements have yet been discovered in the locality, as, apparently the jasper was here merely tested and then transported by the Indians back to the numerous large village sites along the Delaware river, where the manufacture of implements of stone was largely carried on, as is noticeable by the large amount of refuse jasper found at those places.

About half a mile north from the quarry was an Indian corn field and training ground. The field covered an area of about eight acres. Midway between the field and quarry were twenty-four circular mounds, eighteen inches high and six feet in diameter; some of which have been destroyed by the plow, some by relic hunters and a few yet remain, as also a few stone cists.

On our recent visit we discovered a rudely chipped banner stone composed of granulite. This was an unexpected find in the locality. It may have been used by the modern Indians, but not manufactured by them, as it distinctly belongs to the glacial order of implements. It is rudely chipped without perforations or notches. No implement other than jasper, quartz, hematite or argillite and chalcedony have been found here, while the hammer stones are principally residuary gravels or past-glacial boulders. Some distance west from the quarry in a washout we discovered a small cache of chalcedony; this mineral, being more difficult to work, was no doubt placed here for safety and future use. Numerous "turtle¹ backs" abound in the washout.

About two miles west from the Durham jasper quarry, in Springfield township, are the remnants of an extensive Indian village

¹ These are the rudely chipped 'flat bottomed peak backed stones' first brought to notice by the able archaeologist, Dr. C. C. Abbott, who believes they were made by an antochthonous race, who lived here during the ice age. This proposition is controverted by the equally able archaeologist, Holmes, and others who insist that they are but the rejects thrown away in the manufacture of stone implements by the more modern race of Indians. A. F. B.

or camping site. Here Mr. Wm. A. Cawley, of Springtown, Pa., recently discovered several interesting Indian art implements.

First—An interesting and valuable ornamental relic carved in bone by prehistoric man, its length being about five inches, and in diameter one and a quarter inches. The marrow has been bored out with a blunt instrument, and the carving shows signs of the use of a blunt instrument by its many slips out of line. At each end of the bone are notches cut lengthwise to pass a string or dried gut through to hold the ornament in position while suspended from the neck of the wearer. The ornament was found sticking out of a bank of dirt in a gully or wash-out along the Durham creek near the above alluded to Indian village site.

Second—A plummet-shaped stone, about two and a half inches in length and two and a quarter inches in diameter, tapering to an egg shape form, the stone relic, by its careful finish, it having ear notches on each side, one of which, however, had been destroyed before its discovery by Mr. Cawley, plainly shows that it was used for ceremonial purposes by primitive man, and must be classified and placed in the same category of Indian ceremonial objects as the so-called anvil and bust stone.² Numerous implements of stone have been picked up here by Mr. Cawley, a description of which will be furnished later on if desired by the editorial staff of the Antiquarian.

Mutely these relics tell us of vanished generations of humanity, and give us conclusive proof of the fact that man existed on this continent for long ages, linking generation to generation through the misty ages of the past, and may continue during myriads of ages yet to come.

Riegelsville, Pa., January 12, 1897.

CHARLES LAUBACH.

² The above mentioned anvil or bust shaped objects seem to be peculiar to Bucks Co. To what uses they were put is at present unknown. Some archaeologists appear to think they were idols. They are of rude form, roughly chipped, and from a foot to a foot and a half high. Several are on exhibition in the Museum of the University of Pennsylvania at Philadelphia. They are very curious objects.

A. F. B.

STONE IMAGES FROM MOUNDS AND
ANCIENT GRAVES.*

In October, 1895, photographs of a small stone image found in a box-shape stone grave at Castilian Springs, Sumner county, Tennessee, were received by the Bureau of American Ethnology from Mr. S. S. Bush, of Louisville, Ky. Subsequently the image was forwarded to the Bureau by Mr. Bush for the purpose of examination, and at the same time a cast of it was made. This image, which represents a male, and is only three and a half inches high and of rather slender proportions, is illustrated in figures 1, 2 and 3. Figure 1 shows the front view; figure 2 gives a view of the back, exhibiting the fillet extending from the back of the head down to about the middle of the back, in the form of a broad strip, possibly intended to indicate the hair, and figure 3 is a side view showing the frontal compression or sloping head. Attention is called to the



FIG. 2—Rear view of the Bush image.

hair or head-covering shown in the front view (figure 1), and also to the general position and the expression of the face.

A comparison of this image with others found in the same locality and in other localities in middle Tennessee, northern Georgia and elsewhere reveal such a persistence in certain characteristic features as to suggest that there was in use among the ancient people of the Gulf States and the stone-grave belt a somewhat conventionalized form indicative of local origin. Some facts bearing on this question are presented here with the hope that the subject may be further elaborated by other workers in the archeological field.

Haywood, in his "Natural and Aboriginal History of Tennessee" (pp. 123, 124), mentions a stone image found on top of a mound at Bledsoe's Lick (or Castilian Springs), which he describes as follows:

On one cheek was a mark resembling a wrinkle passing perpendicularly up and



FIG. 1—Front view of the Bush image, from Castilian Springs Tennessee. Six-seventh size.

*From the American Anthropologist, Dec., '96.

down the cheek. On the other cheek were two similar marks. The breast was that of a female and prominent. The face was turned obliquely up towards the heavens. The palms of the hands were turned upwards before the face, and at some distance from it, in the same direction that the face was. The knees were drawn near together, and the feet, with the toes towards the ground, were separated wide enough to admit of the body being seated between them. The attitude seemed to be that of adoration. The head and upper part of the forehead were represented as covered with a cap, or mitre, or bonnet; from the lower part of which came horizontally a brim, from the extremities of which the cap extended upwards conically. The color of the image was that of a dark infusion of coffee. If the front of the image were placed to the east, the countenance—obliquely elevated—and the uplifted hands in the same direction would be towards the meridian sun.

A stone head with the "mark passing perpendicularly up and down the cheek" has been found near Clarksville, Tenn.,¹ and



FIG. 3—Side view of the Bush image.



FIG. 4—Image from Bartow county, Georgia. One-fifth size.

the sloping face, or face turned obliquely upward, is a marked characteristic, as we shall see, of half a dozen or more images found chiefly in Tennessee. Special attention is therefore called to this feature.

There was in the possession of Colonel Lewis Tumlin in 1859 a stone idol which had been plowed up near the large mound of the Etowah group, Bartow county, Ga., on the plantation of that gentleman. This, according to Colonel C. C. Jones, "consisted of a male figure in a sitting posture. The knees were drawn up almost upon a level with the chin, the hands resting upon and clasping either knee. The chin and forehead were retreating. The hair was gathered in a knot behind. The face was upturned and the eyes were angular." Unfortunately this specimen was lost during the war. Another, however, was plowed up in the same place, of which a side view is presented in figure 4, taken from the cast in the Smithsonian collection, while a front view is given by Colonel Jones in his plate xxvi. Colonel Jones, who exhibited the original to Drs. Rau and Berendt, at which

¹Thurston: Antiquities of Tenn Fig. 25.

time it is presumed the cast was made, describes the original as follows: "It is a female figure in a sitting posture. The legs, however, are entirely rudimentary and unformed. Its height is fifteen and three-quarter inches, and its weight thirty-three and a half pounds. Cut out of a soft talcose rock, originally of a grayish hue, it has been so much discolored that it now presents a ferruginous appearance." The loins are represented as covered by a kind of kilt, "ornamented both on the left side and behind by rectangular, circular, and irregular lines." Unfortunately these lines are not clear on the cast; hence are not shown in our figure, which also fails to show the full slope of the forehead, which is strongly compressed. The original is in the collection of the Tennessee Historical Society.

We see in this image the fillet or "handle," as Jones called it, but comparatively shorter and narrower than that of the Bush image. This also differs from the other in two important particulars. Here the head is entirely bare, while in the other it has a covering either of hair or some slight cap, either of cloth or skin, though seemingly it is the hair. In this figure, which represents a female, there is a short dress about the loins, while the other (a male) is entirely nude. The strongly retreating or sloping forehead, indicative of frontal compression, is a very distinct characteristic of the Etowah specimen, though not clearly shown in our figure.

In plate IV of his "Antiquities of Tennessee," General Thruston presents figures of three stone images in the collection of the Tennessee Historical Society, which he informs us are "by the photo-mechanical process, and are therefore more accurately presented in the picture than by any description we could give of them." Two of these fig-

¹Antiquities of the Southern Indians, p. 433.

ures represent females and are very distinctly of the type of the Etowah specimen. The lower portions appear to be incomplete; the heads are bare and show the same sloping face, the closed eyes, and the same circular outline; the nose of the one at the right of the plate is also of the same form. Whether the "fillet" is present in these does not appear from the figures or from the author's statement in regard to them. They are sitting figures, the position being apparently the same as that of the Etowah specimen, and the left figure appears to be



FIG. 5—The Perrine image, from Illinois. One-fourth size.

similarly clothed. The latter is from Trousdale county, Tenn., and that on the right from Smith county, in the same state.

Another stone image, belonging to the same type, is shown in plate XI (reproduced from figure 240 of the Twelfth Annual Report of the Bureau of Ethnology), representing front and side views. This, which represents a male, was found by the side of a skeleton, which lay in a large boat-shape clay vessel in a mound on Long Island, Roan county, Tenn. We see here the ob-

lique face and substantially the same position as that of the Bush image. The hair in this case appears to be gathered at the back of the head, somewhat in the form of a chignon. The height of this specimen is fourteen inches. The image in Colonel Tumlin's possession in 1859, above mentioned, appears to have had the hair arranged in the same form as this specimen; the posture, however, if correctly described by Colonel Jones, was somewhat different, and bore a resemblance to the specimen found by Mr. T. M. Perrine in Union county, Ills. This, of which a side view is

shown in figure 5, was obtained from a mound. The right hand of the figurine rests on the right knee, which is drawn up nearly to the chin, a feature not shown in the illustration. In this it is evident that head-covering is the hair. Instead of the fillet or strip on the back, a long triangular space running from the top of the head to the middle of the back is marked off by an incised line. The oblique forehead or indication of frontal compression is a prominent feature here as in the others we have mentioned. The figure is taken from the cast now in the National Museum.

CYRUS THOMAS.



Image from Mound Number 3. Long Island, Roane county, Tennessee.

THE "INDIAN PLANE."

Some time ago Mr. R. B. Averill, of Portland, Oregon, sent me, for identification, a flat, waterworn pebble artificially notched on one side, which he styled an "Indian Plane." Having been found near the water's edge on the Columbia river, and bearing so striking a resemblance to the extemporized net-sinkers so numerous about the fishing places on water courses in New Jersey, Pennsylvania and elsewhere, I at once pronounced it an unfinished net-sinker; or, a finished sinker for a peculiarly fashioned fish net.

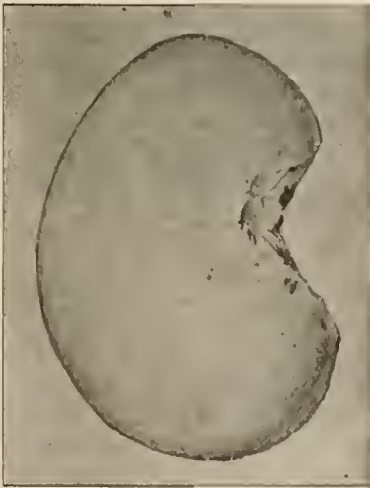


FIG. 1.

This off-hand explanation was not satisfactory to Mr. Averill, who has passed twenty years on the Pacific slope engaged a great part of that time in collecting, and dealing in, Indian relics, and he thereupon sent me a series of twenty similar stones, varying in dimensions from two to six inches in length by one and a half to four inches in width, and a third of an inch or more in thickness, with the request to give them a careful examination. Fig. 1 is a fair average representation of the entire lot. They are all common flat pebbles, of hard volcanic rocks, rounded and smoothed, like all beach pebbles, by attrition and action of

water currents; and from one edge of each a semi-circular notch had been struck, or worked, out; and this abraded indentation, on close inspection, in almost everyone of them, showed unmistakably the effect of wear from continued use.

With the specimens was the following communication from Mr. Averill, in support of his opinion that these homely objects were designed and used as tools and not as mere weights for nets:

"They are known here as 'Indian Planes'—though the term 'scraper,' 'rasp,' or any other indicating their supposed use would answer as well. I, too, at first, believed them to be sinkers, but for the last two years I have been compelled to discard that theory for the following reasons: In the twenty years that I have spent on this coast, looking up relics and natural history specimens, I have had considerable intercourse with the Indians now here; but have met none of them possessing any positive knowledge of primitive stone implements. They used them, but did not make them, saying that they were here when they came, but do not know who made them. The largest of these notched tools I have seen measure about four by six inches, but the most of them are smaller. I have seen a few of them made of flint, but they are rare. Now, for appliances in fishing on the large rivers, such as the Columbia, or Willamette, these notched pebbles are not sufficiently heavy to serve as sinkers for nets, without combining several of them; in fact, a good many of them, and their shape is decidedly against that way of using them. For use as a single line sinker they would prove too heavy, and are obviously not adapted for this purpose. On the banks of our rivers large sinkers are somewhat common, made of pebbles notched on both sides, sometimes all around; and also small line sinkers of stone, which, beyond doubt, were made and used for net and line sinkers. But these

single-notch pebbles occur more frequently about the old camp and village sites remote from water courses than on river banks or about other well-known fishing stations. This fact cannot imply that the camps inland were the factories where the pebbles received their notches, then to be carried back to the rivers, there to be used as sinkers; for transportation both ways would involve more labor than all the notch-making on the beach could, where the raw material was readily at hand. Some of them, probably but little used, present in the notch a sharp cutting edge, and from that they grade to notches worn nearly smooth from long, hard usage. Some, again, that had been so worn are found to have been re-chipped so as to resharpen the dull edge. And in some it is clearly seen that an attempt has been made to give the notch a specialized shape for use in some special manner. Now, it must be admitted that none of these peculiarities are seen in the pebble sinkers merely nicked on each side to hold the string that attaches them to the net or line.

"These one-notch stones are very common here; for discarded, worn-out tools must be abundant where the material of which they are made is so convenient and plenty and their manufacture so easy. This fact, too, militates against the sinker hypothesis, for the labor and trouble of making fast to net or line of these awkward, one-sided pebbles would far exceed that of striking out another notch on the opposite edge. And again, their profusion causes us to wonder how so many nets and lines could have been employed, and how such sinkers could be used about village sites far from fishing places. The unequivocal stone net sinkers here, that I have mentioned, are comparatively scarce; and there is but little data upon which to found the belief that either the

ancient or recent Indians of this region ever practiced, to any great extent, methods of fishing that required sinkers; their common way of getting fish was with the spear, or arrow, or by fixed weirs and traps.

"So, I think, that though the word "plane" may not be appropriate for these rude implements, the evidence is stronger for classing them as implements than as mere weights." The facts and reasons adduced by Mr. Averill certainly render his conclusions quite plausible, but, while he takes exceptions to the imaginary number of nets and lines in use requiring such a profusion of sinkers, can he explain what it was the Indians manufactured so extensively as to necessitate the employment of so many "planes"? The notches in these beach stones were assuredly the part of them brought into use; but what primitive industry was it that called for the aid of so great a number of curved scrapers? They seem well adapted for rounding and smoothing the wooden shafts for harpoons, spears and arrows; and perhaps they were designed for that purpose. Fashioned for that, or any other purpose, however, we feel sure that they—like the two-notched sinkers—were merely emergency aids, made for temporary use, and then thrown away, and formed no part of the hunter's or artisan's regular equipment. In this region the arrow knife, Fig. 2, made of chipped flint, was essential to the nomad's outfit for war or the chase. The pointed blade with cutting edges served as a knife; the lateral notches held the string that fastened the implement to the belt or quiver, and the concave indentation at the broad end was the shaft scraper. The manufacture of such a tool required skill and patient labor, as well as valuable material, and, in consequence, we may suppose, was retained in use until accidentally destroyed or lost.

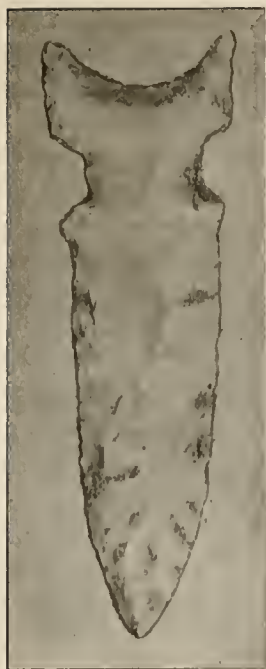


FIG. 2.

Occasionally there is found about old Indian camping places or village sites in this region, an ovoid, or flat, waterworn quartzite pebble, from three to six inches in diameter, with a notch struck out of its thinnest edge, having been so manipulated by striking off a flake first from one side and then from the other as to leave in their place a circular cutting edge, as in the Oregon specimens. But so rarely are these objects found here it is to be inferred they were not in common use, but made to meet sudden exigencies and then cast aside.

The waterworn beach stones, with a single artificial indentation, if found in other localities, have failed to attract the attention of collectors. They are not conspicuous in any of the large museum collections of our country; and, so far as I know, no description of them has before been published. To Mr. Averill, therefore, is due the credit of having brought into notice a heretofore unobserved implement of the American Stone Age.

J. F. SNYDER.

THE FOOD OF CERTAIN AMERICAN INDIANS.

LUCIEN CARR.

(Continued.)

In preparing and serving these different articles the Indian had need of certain utensils which may be roughly classed as kitchen and table ware. Of these, the pot or kettle, to boil his hominy or stew his meat, was first in point of general utility by virtue of the fact that most of his cooking was done in this way. As a rule, these pots were made of clay⁷⁹ (though soapstone was occasionally used⁸⁰), mixed with powdered shells or some other material, and were so thoroughly baked that they could withstand the action of fire. They were of different sizes, ranging from two to ten or even twenty gallons, and were generally distributed from Canada to Florida.⁸¹ When in use, as they were most of the time in every Indian cabin,⁸² they were either hung up over the fire, or "set upon an heape of earthe to stay them from falling." "Wood was then put under and kyndled," great care being taken that the "fye burne equallye Rounde about. They or their women fill the vessel with water, and then putt they in fruite, flesh and fish ana lett all boyle together lika a galliemaufrye, which the Spaniards call olla podrida. Then they putte yt out into disches, and sett before the companye, and then they make good cheere together." We were told that they were moderate in their eating, whereby they

⁷⁹New England's Prospect, p. 75. Sagard, p. 98: Paris, 1865. Marquette, p. 48. In Dumont, Memoires Historiques sur la Louisiane, I., p. 154, and II., pp. 271, 272, Paris, 1753, is a good account of the Indians' manner of making Pottery. See also Bradbury, "Travels," p. 158. Carver, Travels, p. 233.

⁸⁰Ibid., p. 69. Jones, Antiquities of the Southern Indians, p. 460: New York, 1873.

⁸¹Champlain, I., p. 113: Paris, 1830. Adair, p. 424: London, 1775. Timberlake, "Memoirs," pp. 62 and 77: London, 1765. Loskiel, p. 54: London, 1794. De Bry, plates, VIII., XI., XX., etc.: Frankfurt, 1591.

avoid sickness, and the old chronicler, in a fit of righteous indignation at what may have been the excesses of his English neighbors, adds: "I would to God we would follow their example. For we should be free from many kinds of disease which we fall into by sumptuous and unseasonable banquets, continually devising new sauces, and provocations of gluttony to satisfy our unsatiable appetite."⁸³

Another kind of kettle, made of wood,⁸⁴ was in use among the "wandering tribes," as it was not so easily broken, and in Texas they managed to cook their broth in a calabash. This was such a novel process that Cabeca de Vaca, by way of showing "how curious and diversified are the contrivances of the human family," tells us that "not having discovered the use of pipkins to boil what they would eat, they fill the half of a large calabash with water, and throw on the fire many stones of such as are most convenient and readily take the heat. When hot, they are taken up with tongs of sticks and dropped into the calabash, until the water in it boils from the fervor of the stones. Then whatever is to be cooked is put in, and until it is done they continue taking out cooled stones and throwing in hot ones." Thus, we are told, "they boil their food."⁸⁵

To remove the husks and fit the corn, etc., for the kettle, they boiled it in lye or pounded it in mortars made of wood or stone, which were either portable or stationary. Although these mortars were in universal

use among our Indians, they were not indispensable, for upon occasion, as when traveling or hunting, the Indian simply picked up two flat stones⁸⁶ and with them crushed his corn or any other kind of food that he happened to have, and that had to be submitted to this process.* In making their wooden mortars, the Indians "cautiously burned a large log to a proper level and length, placed fire a-top, and with mortar around it, in order to give the utensil a proper form, and when the fire was extinguished, or occasion required, they chopped the inside with their stone instruments, patiently continuing the slow process, till they finished the machine to the intended purpose."⁸⁷ Stone mortars are said to have been in use among the Osage Indians and seem to have been public property, each family using them in rotation.⁸⁸ They were simply stones selected at random, but of suitable size, in which the cavity was made or worn by use. To this same category must be added those stationary mortars that were worn in the face of some outcropping ledge of rock, such as were more or less common at or near the village sites of the Indians that lived south of the Ohio.⁸⁹ The pestles used in these deeper mortars were of stone or wood, some of them rudely ornamented with carvings. West of the Alleghanys, a short pestle or pounder with a flat rounded base, known locally and to collectors as a muller, is fre-

⁸²La première action qu'ils font le matin à leur reveil, c'est d'estendre le bras à leur écuelle d'écorce garnie de chair, et puis de manger. Au commencement . . . je voulus introduire la coutume de prier Dieu devant que de manger . . . mais l'Apostat me dit: Si vous voulez prier autant de fois qu'on mangera dans la Cabane, préparez vous à dire vostre "Benedicite" plus de vingt fois avant le nuit." Jesuit Relation, 1634, p. 32: Quebec, 1858.

⁸³Hariot's "Narrative," plate XV. and text: London, 1893.

⁸⁴Charlevoix, VI., p. 47: Paris, 1744. Lafitau, III., p. 79: Paris, 1724.

⁸⁵Translation of Buckingham Smith, p. 161: New York, 1871. Compare Relation, 1633, p. 4: Quebec, 1858.

⁸⁶Sagard, "Voyage des Hurons," p. 45: Paris, 1865. See Charlevoix, VI., p. 45 for use of lye.

⁸⁷Adair, p. 416: London, 1775. Cf. Du Pratz, II., p. 177: Paris, 1724. Lafitau, III., p. 79: Paris, 1724.

⁸⁸Hunter, Memoirs, pp. 201, 261, 290: London, 1824. League of the Iroquois, p. 358.

⁸⁹Jones, "Antiquities of the Southern Indians," pp. 309-314: New York, 1873.

quently found.⁹⁰ Having pounded his corn to the requisite degree of fineness, it was sifted through sieves or sifters of cane splinters,⁹¹ or through baskets made for the purpose, of rushes or splits,⁹² and was then ready to be boiled into hominy or baked into bread.

Coming now to their table furniture, we find that they had a variety of spoons, cups, plates and dishes of different materials, though they were somewhat unequally distributed among the different tribes. Thus, for example, among the Hurons of early times there was such a scarcity of plates and cups, or for some other equally good reason, that upon the occasion of a festival, each guest was expected to bring with him his bowl of bark with a spoon inside, both of which are said to have been very handsome.⁹³ The Indians of New England were better off; and except that articles of earthenware were relatively rare, owing to "the scarcity of clay,"⁹⁴ they had an abundance of baskets, bottles, dishes, spoons, etc., of wood or bark; and what is more to the point they had made great progress in ornamenting them. This is especially noticeable in their "delicate sweet dishes" of birch bark, "from the size of a dram cup to one holding a pottle, furnished on the outside with flourisht works, and on the brim with glistening quills taken from the porcupine and dyed some black and others red, the white being natural." So, too, the baskets in which they put their provisions, made of rushes, bents, maize-husks, bark of trees, or

a kind of wild hemp, etc., are said to have been "very neat and artificial, with the portraits of birds, beasts, fishes and flowers upon them in colors." They were of different sizes and would hold from a pint up to four bushels or more. Their dishes, spoons and ladles "were very neat and of a sort of wood not subject to split," and the mats upon which they slept and sat were of several sorts and "were dyed some black, blue, red and yellow."⁹⁵

Creditable as is this display, it was surpassed both in variety and number by the different articles that made up the table furniture of the southern tribes. Especially is this the case with the earthenware, which, even as early as in the time of De Soto, is said to have differed but little from that of Estremoz and Montemor, towns in Spain.⁹⁶ Du Pratz, who wrote some two hundred years later, tells us that this pottery was made by the women, who not only form the vessel, but dig up and mix the clay. In this they were quite expert, for they are said to make "pots of an extraordinary size, pitchers with a small opening, bowls, quart bottles with long necks, pots or pitchers for their bear oil which will hold forty pints, and lastly plates and dishes in the French fashion." He had some made in imitation of his imported ware, which was "of a very pretty red."⁹⁷ Adair, whose account of these tribes, aside from his notion as to their identity with the lost tribes of Israel, is one of the best that we have, confirms this statement, and adds certain particulars as

⁹⁰"Ibid.," p. 314: New York, 1873. Cf. Cartler in Hakluyt, II., p. 120: Edinburgh, 1889, for "beetles of wood."

⁹¹Du Pratz, "Louisiane," II., p. 179: Paris, 1724. Dumont, "Memoires sur la Louisiane," I., p. 154: Paris, 1753. Lafitau, III., p. 79. Adair, p. 407: London, 1775.

⁹²Gookin, "Indians of New England," in 1st Series, Mass. Hist. Coll., Vol. I., p. 150.

⁹³Sagard, p. 100: Paris, 1865. Champlain, I., 262: Paris, 1830. Lescarbot, p. 758: Paris, 1866. Relation, 1634, pp. 38, 39: Quebec, 1858.

⁹⁴Gookin, p. 151 in 1st Series, Mass. Hist. Coll., Vol. I. "Per contra," Winslow, in Purchas, Pilgrims IV., p. 1861, says: "They have Earthen pots of all sizes," and Brereton tells us they had "drinking cups" of copper.

⁹⁵For this account, the reader is referred to Gookin, p. 151, and to Josselyn, "Two Voyages," in 3d Series, Mass. Hist. Coll., Vol. III., p. 307.

⁹⁶Knight of Elvas, in Hist. Coll. Louisiana, part II., p. 201.

⁹⁷"Histoire de la Louisiane," II., p. 178: Paris, 1758.

to other articles that are of interest. They make, so he tells us, "earthen pots to contain from two to ten gallons, large pitchers to carry water, bowls, dishes, platters, basons and a prodigious number of other vessels of such antiquated forms as would be tedious to describe and impossible to name. Their method of glazing them is, they place them over a large fire of smoky pitch-pine, which makes them smooth, black and firm."⁹⁸ In addition to this liberal supply of table ware, they had cups and spoons of shells and gourds; and their wooden dishes, and spoons and ladles of wood and buffalo horn, "show something of a newer invention and date, being of a nicer workmanship, for the sculpture of the last is plain, and represents things that are within reach of their own ideas."⁹⁹ Their sifters and strainers were of canes and of different sizes,¹⁰⁰ and "their carpets of a wild hemp were painted on each side with such figures, of various colors, as their fruitful imaginations desired; particularly the images of those birds and beasts they are acquainted with; and likewise of themselves acting in their social and martial stations." These carpets, so it is said, "show that due proportion and so much wild variety in the design that would really strike a curious eye with pleasure and admiration."¹⁰¹

Of their methods of preparing their food our accounts are full and explicit, and when we reflect that their only way of cooking was at an open fire, and that their only utensil was the kettle, we can understand the old chronicler's surprise at the variety of dishes they were able to concoct out of "their wild flesh, corn, beans, peas, potatoes,

pompions, dried fruits, herbs and roots."¹⁰²

On this point, too, Dumont must have been an authority, for speaking of corn, he tells us that "there were forty-two different ways of preparing it each one of which had its proper name."¹⁰³ He does not, it is true, describe them, but other writers are not so reticent, and upon comparing their accounts and receipts it is possible to get a good idea of some of their favorite dishes. Beginning with corn—the foundation of all their cooking—we find that when in the roasting ear stage its use was prefaced by a solemn feast which seems to have been in the nature of a thank-offering of first fruits. Among the Southern tribes this festival was known as the Boosketau,¹⁰⁴ and it was attended with certain rites and privileges, among which was a general amnesty for all crimes except murder. There was no prescribed time for its beginning or duration, but it usually lasted several days, and there is reason to believe that formerly it was not until it was over that each family was privileged to make what use it pleased of its own field of corn.¹⁰⁵ When, however the feast was over, and the old hearths had been swept out and the new fire kindled, the restriction was removed, and the Indian woman as head of the cabin, cook and mistress of the household generally, was given an opportunity for the display of those housewifely qualities upon which her position in the family and village chiefly depended. That she showed herself equal to the task imposed upon her, is the evidence of almost all the old chroniclers who enjoyed her hospitality, and it will not be gainsaid by those of us who have a practical acquaintance with the

⁹⁸North American Indians, pp. 421, 424: London, 1775.

⁹⁹"Ibid.," p. 421: London, 1775.

¹⁰⁰See note 4, p. 23, and Adair, p. 416.

¹⁰¹Adair, p. 422: London, 1775.

¹⁰²Adair, p. 409: London, 1775.

¹⁰³"Memoires sur La Louisiane," I., pp. 33, 34: Paris, 1753. Cf. Loskiel, p. 67: London, 1794.

¹⁰⁴"Mounds of the Mississippi Valley," in Smithsonian Report for 1891, pp. 542 and 544. Du Pratz, II., Chap. XXV. Dumont, "Memoires," I., Chap. XXV.: Paris, 1753.

¹⁰⁵Hunter, Memoirs, p. 273: London, 1824. Joutel, in "Hist. Coll. Louisiana," p. 151. Adair, p. 101: London, 1775.

succulent dishes we owe to her skill and ingenuity. Among them, there was one that was in such general demand that it may be said to be typical. To the French it was known as *sagamite*,¹⁰⁶ whilst among the English it was variously termed *samp*¹⁰⁷ or *hominy*.¹⁰⁸ It was made of ripe corn, either whole, or pounded in a mortar or between two stones, and boiled with any kind of meat or fish, dried or fresh, that they happened to have. If, as often occurred, they had no meat, and did have an oil or a fat of any kind, they used it to give body and flavor to their *sagamite*.¹⁰⁹ In fact, fat is said to have been their "sugar" or sauce, and among the northern tribes it was eaten by itself "as we do an apple."¹¹⁰ When they were in season they mixed pumpkins, fresh or dried, chopped up fine, and beans, peas and other vegetables with the corn.¹¹¹ If, perchance, their corn gave out altogether, they substituted for it pounded chestnuts, acorns, wild rice or, in fact, anything that would give substance and character to the dish.¹¹² Sometimes in the spring and early summer, they used green corn and beans instead of dried; and under the name of *succotash* this is a favorite summer delicacy with us. We, however, cook the vegetables by themselves, though formerly this was not the case, for, according to an old writer,¹¹³ when made

with bear oil, "the fat moistens the pulse and renders it beyond comparison delicious." Another way of preparing the green corn was to slice off the grains from the cob on which they grew, and knead them into a paste. This, we are told, can be done "without the addition of any liquid, by the milk that flows from them; and when it is effected, they parcel it out into cakes, and inclosing them in leaves place them in hot embers where they are soon baked,"¹¹⁴ or else they boil them. In a burst of justifiable enthusiasm the writer from whom much of the above account is taken adds: "And better flavored bread I never ate in any country," a sentiment which those of us who know the dish will cheerfully endorse. Their *Leindohy* or *bled-puant*,¹¹⁵ although in great request, was not, for obvious reasons, held in high esteem by the whites. To prepare it, they took the corn before it was fully ripe, and buried the ear in stagnant water, for two or three months, and until it was rotten. Then they took it out and boiled it with meat or fish, or ate it roasted in the ashes. There is nothing, we are told, that smells worse than this corn, though they suck it as if it was sugar cane. So strong and offensive was the odor, that the old writer confessed that he not only could not eat it, but did not like to touch it, as the infection clung to his hands

¹⁰⁶Relation, 1633, p. 4: Quebec, 1858. Jontel, "Journal," p. 161. Charlevoix, VI., p. 46.

¹⁰⁷Williams' Key, in "Narragansett Club" Publications, I., p. 41.

¹⁰⁸Beverly, "Virginie," p. 243: Amsterdam, 1707. Adair, p. 407: London, 1775. Father Rasle, p. 59 in Kip's Jesuit Missions.

¹⁰⁹Lafitau, III., pp. 79, 81, 85: Paris, 1724. Sagard, p. 97. Gookin, p. 150, 1st Series Mass. Hist. Coll. Vol. 1.

¹¹⁰Relation, 1633, p. 4, and 1634, p. 36: Quebec, 1858. Romans, p. 68: New York, 1776. Lafitau, III., p. 83: Paris, 1724. Du Pratz, II., p. 88: Paris, 1758.

¹¹¹Capt. Smith, p. 127: Richmond, 1819. Bartram, "Observations," p. 59: London, 1751.

Gookin, p. 150, in 1st Series, Mass. Hist. Coll., Vol. 1. Father Gravier, in Shea's Early Voyages, p. 126. Romans, p. 84: New York, 1776. Heckwelder, p. 194: Philadelphia, 1876.

¹¹²See note 4, p. 21. Cf. Capt. Smith, p. 121. Gookin, p. 150. Williams' Key, p. 90, in Rhode Isl. Hist. Coll., Vol. I.

¹¹³Carver, "Travels," p. 263: London, 1778. Cf. Williams' Key as to *succotash*.

¹¹⁴"Ibid," p. 114: London, 1778. Cf. Adair, p. 407. Bartram, "Observations," p. 59: London, 1751. Capt. Smith, "Virginia," p. 127: Richmond, 1819. Romans, p. 92: New York, 1776.

¹¹⁵Sagard, p. 97. Lafitau, III., p. 85: Paris, 1724.

for several days. Nocache or rockahominy¹¹⁶ was another favorite preparation, especially when away from home traveling or hunting. To make it the ripened corn was first parched and then pounded into meal. In this shape it would keep indefinitely, and it was so nutritious that two or three spoonfuls of it mixed with water would furnish a man with food for a day. When they had maple sugar, they mixed it with the meal, as it was considered a great improvement. They also took the corn before it was fully ripe, and slicing the grains from the cob, they dried them in the sun or on a frame over the fire. This was the *ble-grolee* of the French, and to use it, they cooked it in the same way as their *sagamite*.¹¹⁷

In addition to these dishes, which are in the nature of broths, stews or porridges, the Indians made several kinds of bread of their corn,¹¹⁸ or failing this, of chestnuts, beans, acorns, sweet potatoes or any other suitable material that they could get.¹¹⁹ This involved an entirely different process of cooking, and the fact that some of this bread, as for instance the ash cake, johnny cake and the pone, still finds favor with us, is proof of the success that attended their efforts. In preparing these dishes, the ripe corn was pounded to a fine meal, which was duly sifted, and having been made into

¹¹⁶Williams' Key, in "Narragansett Club" publications, I., p. 40. New England's Prospect, p. 76. Beverly, "Virginie," p. 250: Amsterdam, 1707. Bartram, "Observations," p. 71. This was a very common way of preparing the corn, though the accounts vary somewhat as to the condition of the corn, when used, i. e., whether green or ripe. Cf. Du Pratz, II., p. 5: Paris, 1758. Romans, pp. 67, 96: New York, 1776. Heckwelder, p. 195. Sagard, "Voyage des Hurons," p. 142.

¹¹⁷Charlevoix, VI., p. 46: Paris, 1744. Lafitau, III., p. 84: Paris, 1724.

¹¹⁸Lafitau, III., pp. 85, 86: Paris, 1724. Capt. Smith, p. 127. Bartram, "Florida," p. 38: Dublin, 1793. Joutel, "Journal," pp. 160, 176, etc. Champlain, I., p. 113: Paris, 1830. De Vries, pp. 137, 156. Romans, "East and West Florida," pp.

dough with water or, as Adair¹²⁰ suggests, with bear oil, it was covered with leaves and baked in the ashes, or on broad stones or "broad earthen bottoms" placed over a fire. In baking loaves, and the same account will apply to pones, "they make a strong fire and when it is burned down to coals, they carefully rake them off to each side, and sweep away the remaining ashes; then they put their well-kneaded bread loaf, first steeped in hot water, over the hearth and an earthen bason above it, with the embers and coals a-top." This method of baking is as clean and efficacious as if done in any oven, and the loaf cooked in this manner is said to be firm and very white. It is, moreover, so we are told, "very wholesome and well tasted to any except the vitiated palate of an epicure,"¹²¹ and was served with "bear's fat purified into a perfect chrystalline oil, and honey with which the country abounds."¹²² Sometimes the dough is mixed with fruit, fresh or dried as the case may be, and this makes a sort of cake of which they are fond.¹²³

Of their drinks not much can be said, for the reason that, generally speaking, they had nothing but water, and curiously enough, they preferred it warm and stagnant.¹²⁴ Occasionally, as we have seen, they made a milk of hickory nuts, and they

92, 94. From this same author, p. 84, we learn that they cultivated for bread all varieties of the Zea Mays, likewise two varieties of guinea corn. Cf. Heckwelder, p. 195: Philadelphia, 1876. Sagard, p. 94.

¹¹⁹Romans, p. 84: New York, 1776. Father Rasle, p. 59. Smith, "Virginia," p. 121. Lawson, Carolina, p. 25: London, 1718.

¹²⁰Adair, p. 407: London, 1775.

¹²¹Adair, p. 408: London, 1775.

¹²²Romans, p. 92: New York, 1776. On p. 177, he tells us that bees are not natives of this country.

¹²³Heckwelder, p. 195. Bradbury, "Travels," p. 37: Liverpool, 1817. Lafitau, III., p. 86: Paris, 1724. Williams' Key, p. 121. Sagard, p. 94, and tome II., p. 230: Paris, 1865. Lawson, Carolina, p. 208. Charlevoix, VI., p. 48.

¹²⁴Beverly, Virginie, p. 248: Amsterdam, 1707.

diluted and drank the broth in which their hominy was boiled.¹²⁵ They, also, drank the bouillon in which their meat, or the crushed bones of such animals as they ate, were cooked.¹²⁶ The sap of the sugar maple, according to La Hontan,¹²⁷ was also drunk, and it was not unusual for them when cooking "a fat bear or three or four beavers" to skim off the grease that rose to the top of the kettle, and drink it as if it were the sweetest "parochime,"¹²⁸ whatever that may have been. That the Indians of Virginia and elsewhere flavored their drinking water with "ginger, saxifras and other wholesome herbs," including honey and dried fruits,¹²⁹ is probable enough; but that "they drank wine whilst the grape lasteth,"¹³⁰ we doubt, though Gookin tells us that in Massachusetts they "planted orchards of apples and made cider; which some of the worst of them are too prone to abuse into drunkenness."¹³¹ Evidently, with the culture of the apple, they had also learned from the whites how to manufacture and drink hard cider.

Thus far our investigations have been almost entirely confined to the produce of

their fields, and, satisfactory as this seems to have been, it is confessedly but a part of the picture. To complete it, the canvas must be shifted, and then we shall see them in the first or lowest stage of development, depending upon the chase for their supply of animal food. And yet, even in hunting and fishing, they had made considerable advance, for although, as we have seen, no one could acquire an absolute title to a foot of land, yet the idea of personal property had been so far developed that, as was the case with the fields and corn patches, each person could obtain a well-defined tract or game preserve, "two, three or four miles in extent,"¹³² within which he alone could hunt and fish. They had also learned that, whilst it was possible by their individual efforts to add materially to their stores of animal food, yet, for the chief supply, they must trust to the regular hunting and fishing excursions of the entire village, and to the united exertions of their neighbors.¹³³ In other words, the surround and the game drive¹³⁴ had virtually taken the place of the still-hunt and the dead-fall, and the seine, the weir and the dam had,¹³⁵

¹²⁵Adair, p. 416: London, 1775. Jesuit Relation, 1634, p. 40: Quebec, 1858. Lafitau, III., p. 114: Paris, 1724.

¹²⁶Jesuit Relation, 1634, pp. 36 and 40. La Hontan, II., p. 99: A la Haye, 1703. Capt. Smith, p. 127: Richmond, 1819. Loskiel, p. 74.

¹²⁷Tome II., p. 59: A la Haye, 1703. Hunter, p. 261. Lafitau, III., p. 143: Paris, 1724.

¹²⁸Jesuit Relation, 1634, p. 37: Quebec, 1858.

¹²⁹Capt. Smith, "Virginia," p. 84: Richmond, 1819. Hunter, "Memoirs," p. 261: London, 1824. Lawson, "Carolina," p. 17. Loskiel, p. 74: London, 1794.

¹³⁰Ibid., Vol. I., p. 84: Richmond, 1819.

¹³¹Gookin, in 1st Series, Mass. Hist. Coll., Vol. I., p. 161.

¹³²Williams' Key, p. 189. Lafitau, III., p. 39: Paris, 1724. The Hurons agree among themselves "to allot each family a certain compass of ground, so that when they arrive at the place they divide themselves into tribes. Each hunter fixes his house in the center of that ground which is his district": La Hontan (English Ed.), Vol. II., p. 59, London, 1703. Cf. Minnesota Hist. Coll., Vol. V., p. 252. La Potherie, I., p. 290, and III., p. 33.

¹³³Lescarbot, III., p. 776: Paris, 1866. Joselyn's "Two Voyages," 3d Series, Mass. Hist. Coll., Vol. III., p. 296. Lawson, Carolina, p. 206: London, 1718. Laudonniere, p. 12: Paris, 1853. Cabeza de Vaca, pp. 75, 77. Loskiel, p. 78. Smith, "Virginia," p. 133: Richmond, 1819. Father Marest in Kip's Missions, p. 209.

¹³⁴Du Pratz, II., pp. 71 and 87 et seq.; III., p. 210; and I., p. 312. Lawson, "Carolina," p. 207: London, 1718. La Hontan, I., Chaps. X. and XI.: A la Haye, 1703. Charlevoix, V., pp. 188, 189, 192: Paris, 1744. Loskiel, pp. 79, et seq.: London, 1794. Perrot, p. 54: Paris, 1864. Smith, "Virginia," p. 133. Williams' Key, p. 141, in Vol. I., Rhode Island Hist. Soc. Publications. Champlain, I., p. 334: Paris, 1830. New England's Prospect, p. 99.

¹³⁵Hariot's Narrative, plate XIII., and text: London, 1893. Laudonniere, p. 18. De Vries, p. 162. Loskiel, p. 95. Knight of Elvas, in Hist. Coll. Louisiana, part II., p. 172. Relation, 1634, p. 44. Lescarbot, III., p. 794. Adair, p. 403. Beerly, "Virginie," p. 212: Amsterdam, 1707. Cabeza de Vaca, p. 75. Lawson, "Carolina," p. 209: London, 1718. Sagard, Chap. XIX.: Paris, 1865. Bureau of Ethnology, XII., p. 549.

to a great extent, superseded the hook, the dart and the hand-net.

To describe even a tithe of their different methods of hunting and fishing with the attendant ceremonies, would lead us beyond our prescribed limits, and we content ourselves with calling attention to the prodigious quantity of game that was sometimes taken in the course of these expeditions. Captain Smith,¹³⁶ for instance, tells us that "they kill 6, 8, 10, or 15 deer at a hunting." According to Cabeza de Vaca¹³⁷ a few Indians in Texas sometimes kill from two to three hundred deer, and on one occasion in Wisconsin the Pottawotomies, "having declared war against the bears," killed in a short time upwards of five hundred of them.¹³⁸ South Carolina, we are told, circa 1750, exported 25 @ 30,000£ worth of deer skins per annum;¹³⁹ and as late as 1819-1820 the Sacs and Foxes, who then lived in northwestern Illinois and northeastern Missouri, brought in, among other things, as the result of their winter hunt, 650 bear and 28,680 deer skins.¹⁴⁰ These figures will give some idea of the quantities of game that must have existed in early times, and they will enable us to understand how it was possible for the Indians to serve up, at one village feast, twenty deer and four bears, and at another, a hundred and seventy fish, "a hundred and twenty of which were as large as salmon."¹⁴¹

¹³⁶Capt. Smith, Virginia, p. 133: Richmond, 1819.

¹³⁷Buckingham Smith's Translation, p. 109.

¹³⁸Father Allouez, in Shea's Discovery and Exploration of the Mississippi, p. 71: New York, 1852.

¹³⁹Douglas' "Summary," p. 176: London, 1760.

¹⁴⁰Morse's Report, p. 126: New Haven, 1822. In 1626, according to the Relation of that year, p. 5, from 15,000 to 20,000 beaver skins are said to be annually exported; and Charlevoix speaking of the buffalo hunts, "en-deçà et au-delà du Micissippi," tells us, p. 192, "on prétend qu'il ne revient jamais un parti de chasse, qui n'ait ainsi jetteé par terre quinze cents ou deux milles Boeufs." Cf. Father Rasle, in Kip's Missions, p. 39. Relation, 1633, p. 2: Quebec 1858. Perrot, p. 126, says that the Saulteurs in one winter, on Ottawa Island, killed 2,400 "Elans" or Moose.

¹⁴¹Jesuit Relation, 1636, p. 111. Cf. Relation, 1643, p. 4: Quebec, 1858.

(TO BE CONCLUDED.)

HOME LIFE OF THE SIOUX INDIANS.

GEORGE E. BARTLETT. (HUSTÉ).

Concluded.

But in spite of the conceit of this chief, he is a grand, good old man. And he is as brave as a lion, too. More than once have they incarcerated him in the guard-house for boldly standing up and telling a commission of noted men from the East that his people were being imposed upon. One episode in Red Cloud's life is especially worthy of our consideration.

When Dr. McGillicuddy was agent at Pine Ridge, Red Cloud visited Washington. There he made a very favorable impression upon the authorities, and as a token of their good will they gave him permission to erect a \$6000 house, all bills being guaranteed by the Indian office. The agent wrote back to Washington that the erection of such a magnificent residence on the reservation would incite the jealousy of all the other Indians, for none of them resided in houses worth more than a few hundred dollars, if that much.

Red Cloud was very indignant that the agent should interfere in his affairs, and when the next commission visited Pine Ridge, he laid his grievances before the gentlemen, stating among other things that the agent had a personal spite against him; that rations had been cut short, and, in fact, gave the usual Indian complaints. As soon as the commission had gone away, the agent, being somewhat nettled at the censure which the committee had heaped upon him, sent for the chief and gave him a good lecture in the office. This made Red Cloud very angry, and he told the interpreter to tell Dr. McGillicuddy what he thought of him. The doctor, to show his authority, put Red Cloud in the guard-house, and when the news was carried to his followers, several hundred of them armed themselves, came to the Agency and assembled in the

council chamber. It was a very grave affair, and when Dr. McGillicuddy entered with the chief he knew that only wisdom and forbearance would avert a conflict, for all the Indians had their guns, revolvers and knives. The police were present, fully armed, to assert the authority of the government. Standing up before them all, the chief said that if he were discharged from custody, he would promise to be courteous and respectful in the future, but that he wanted his people cared for and not maltreated. He said that the hundreds of young men present were ready to establish the justice of their position, if necessary, with their lives. Red Cloud further said that if he could benefit his people to any great extent he would gladly give up his life for them. With this the council broke up amid general good feeling and Red Cloud returned to his camp. The agent ordered a two-story frame house to be erected, which cost in the neighborhood of \$1500, and which is considered a very fine building among the Indians.

During the Messiah craze Red Cloud remained loyal to the government, although hostiles among his own people captured him and his son Jack Red Cloud and carried them off to the Bad Lands. From that camp he escaped and walked back to the Agency, nearly twenty miles, thus showing his love and steadfastness for the authorities. His son, Jack Red Cloud, promises to be a man of some ability, and although the young fellow is at present but twenty years of age, he is as near a perfect gentleman as it is possible for an Indian to be as long as he clings to blanket and tribal customs. *

YOUNG-MAN-AFRAID-OF-HIS-HORSES.

His Indian name is "Ta sun Ke Ko-Kipapi hok'silan," which really means "Boy-afraid," etc., but at the same time

* He is now in very feeble health and may soon die.—Editors.

carries a meaning like that denoted by our word "junior," as applied to a son having his father's full name. He is about forty-seven years old, and is by all odds the best disposed Indian of any note on the entire reservation. He has always been friendly to the whites, taking no part in the troubles that have occurred between them and the Sioux; he has never been inclined to be quarrelsome or given trouble in any way. His camp is on White Clay Creek, about nine miles north of Pine Ridge, where he lives a quiet, peaceful life with his followers, of whom he has quite a number.

RAIN-IN-THE-FACE.

"Ite Maga'ju," as his Indian name goes, is fifty-seven years old. He is credited with having much real bravery, but still, Indian fashion, he resorts to strategy in his warfare. When actual hard fighting becomes a necessity, he is in no wise backward about doing his part, but may be found in the front ranks, or wherever danger threatens, setting a valiant example to his followers.

"GALL" AND "GRASS".

Both these (Pizi and Peji in their dialect) are about the age of fifty-seven. They are, and have been, prominent among the Sioux chiefs and have a good reputation as warriors and councilors.

CROW DOG.

"Kan'gi Sun'ka" is about sixty-nine years old. He comes from a mean family, but is a much better-looking man than were his two brothers, "Black Crow" and "Brave Bull," both of whom are now dead. His expression is usually rather pleasant, and he impresses one as an Indian who could appreciate and respond in some measure to kind treatment; but who, if ill-treated or deeming himself insulted, would require full reparation and satisfaction.

He held a feud of thirty years' standing with Spotted Tail, which culminated in the killing of the latter, at Rosebud Agency, Dakota, in 1880. Each man had sworn ven-

geance against the other, and it was at the end merely a question of who should get the advantage. Crow Dog was confined in the jail at Deadwood for nearly three years, and finally discharged on the ground that the United States court had no authority to try an Indian for an offense for which he made a settlement with the tribe to which the injured party belonged.

During the recent trouble at Pine Ridge, Crow Dog joined the hostiles in the Bad Lands for nearly a month, then in company with Two Strike and High Hawk, returned peaceably to the Agency. There is related of him an incident which reminds one of noble Caesar's death. During a most exciting debate, when one of the peace envoys from the Agency was endeavoring to persuade the hostiles to return, some excited young men, brandishing war clubs and knives, threatened the life of Crow Dog. Louis Shangrau was seated next to Crow Dog during the tumultuous scene which followed. In relating the incident to some newspaper correspondents at Pine Ridge, Louis said: "When one young fellow with a stone-headed club rushed up to Crow Dog, crying out, 'Kill the chief! Kill the chief!' the Indian leader pulled his blanket over his head and said to me in an undertone, 'If I am to be murdered by my own people, I do not want to know what traitor struck the blow!' It was one of the bravest things I ever saw an Indian do."

SPOTTED TAIL.

"Sinte Galis'ka" was about fifty-seven years of age at the time of his death. He was far the ablest man in the Sioux nation, and the most sensible Indian who ever lived in the Northwest; always true to the whites and of great value to the government for his assistance in concluding treaties with his people. General John Cook, who was agent at Rosebud at the time, mourned his loss as that of a valued personal friend. The general was often under the necessity of appealing to him for aid in settling difficulties pertaining to Agency affairs. Spotted Tail would address the Indians in a most intelligent manner, telling them the agent was working for their good; that many things he did were not of his own volition, but were

necessary in carrying out the orders of the Indian Department; that much which seemed useless or even a hardship to them was only a part of a scheme which was for the general benefit; the agent was a good man, and their friend, and by opposing him they only caused him trouble and made it all the harder for him to be of use to them. By such means he suppressed many incipient troubles, which, under less skillful management, would have assumed alarming proportions. Spotted Tail had a mind of unusual clearness; he was shrewd, logical and readily saw the force of an agreement. At the same time, sophistry was thrown away on him; he could readily detect a flaw in reasoning and was quick to point it out. There was nothing little-minded or mean about him. He was upright and honorable to the last degree; his credit was good at the traders' stores for any amount he chose to purchase, and he always paid his bills in full at the appointed time. In short, he was one of the wisest and best of Indians; his counsels were always attentively listened to, and his commands or suggestions obeyed without question. He was ever ready to use his influence on behalf of the government officials, and was never known to harm a white man; on the contrary, he gave assistance to many who stood in need of it. Especially was this the case during the latter years of his life.

These Indian chiefs with one or two exceptions are now living upon the various Agencies apparently contented with their condition. Recently a large number of them left for the East and held a council with the authorities at Washington.

Those at Pine Ridge who were foremost in the Ghost Dance are deserving of mention, as they are all more or less men of prominence, and when the older chiefs have died, will be the leaders of the Sioux. They are High Hawk, Yellow Hair, Good Boy, Big Road, Big Thunder, Spotted Eagle, Bear-Comes-Back-and-Lays-Down, Hollow-Horned Bear, Short Bull (recognized leader of the Ghost Dancers), Little (who started the trouble at Pine Ridge), and two rising young men, George Beef Lights and Itonkansan (The Weasel).

EDITORIAL.

Dr. Daniel G. Brinton has begun a course of six lectures on the "Religions of Primitive Peoples." These are given at the various Eastern educational centers. At the close of the course, they will be published by G. P. Putnam's Sons, as Vol. II of the series, "The American Lectures on the History of Religions."

Historic, comparative and psychologic methods of studying religions are treated. Religions are considered as including all superstitions and not as confined to any particular belief or morals. No tribe devoid of religion is known. Dreams and visions sometimes brought on by fasting and other rites, "life and death," light and darkness, are among the greatest suggestive stimuli of religious feelings.

Religious expression to the God or Gods is in the form of prayer, praise, etc.; to men in the form of prophecy, the taboo, inspiration, etc.

No objects are worshiped as such, but the primitive man sees deeper than the "idol." Religious feelings have been the basis of the secret societies and their shamans, ceremonial law, social custom, etc., all of which occupy such an important place in the study of races. H. I. S.

The approach of the milder seasons of the year induces us to urge students and collectors, who will soon resume their archaeological field work, to exercise greater vigilance and care in their observations; to broaden their labors and make them more comprehensive; and endeavor to attain results of substantial value to science as well as to themselves. To advance the cause in which we are enlisted, more is wanted than simply the collection of "Indian relics" as curiosities, and the ruthless destruction of mounds for the sole purpose of securing their buried contents.

The higher motive in this work is the rational interpretation of the purposes and significance of these remains, and, by accumulation of data, and enlightened methods of study, to coerce from them, as from graven glyphs, the life history, aspirations, physical and psychic characteristics of their authors.

Field explorers of all classes should steadily bear in mind this higher motive, and, as far as practicable, accurately note every point of interest to be observed. American Archaeology will not be perfectly systematized until the entire field of prehistoric earth works has been accurately mapped, marking the location and form, and giving complete descriptions of each monument, sepulchre and defensive embankment. With this ultimate object in view, diagrams of such remains should be made, indicating their geographical distribution, and relations to each other and to their topographical surroundings, supplemented by minute details of their construction, as dimensions, orientation, elevation, incorporated materials and relative arrangement of materials; with exact descriptions of all enclosed objects and their relative positions.

The magnitude of this great task places its achievement beyond the capacity of the individual. It may be promoted by co-operation of individuals; but it should be executed by the general government at public expense. And it may so be done in course of time; yet, while scientists, who are proverbially indifferent lobbyists, are awaiting, and begging consideration from politicians for its accomplishment, we may as well be doing all we can ourselves in its aid by personal or united efforts.

A few very creditable attempts have been already made by able enthusiasts to map the ancient earthen monuments, now rapidly

disappearing, of certain circumscribed districts; as, for instance, the fine plats drawn by the late Dr. Lapham, of Wisconsin, of the effigy mounds of his state; and the excellent delineations of many of the Ohio mounds by Mr. E. G. Squire. Dr. John J. R. Patrick, of Belleville, Illinois, now deceased, for several years devoted a part of each summer, with competent engineers and employes, at his own expense, in surveying the entire group of sixty-one mounds in the American Bottom, opposite St. Louis, chief of which is the great Cahokia pyramid, perfecting a map of them drawn to a fixed scale, strictly accurate and finely executed, which is now the property of the Missouri Historical Society at St. Louis. The learned curator of the Ohio State Archaeological and Historical Society's Museum has been engaged for three years in mapping the antiquities of that state, at private expense; an undertaking that will require the labor of many years yet for its completion.

Any and all contributions to records of this class will be of value in advancing the progress of this magnificent scheme, unfortunately yet but in its incipiency. To another line of inquiry, of considerable popular interest, we wish to particularly direct the attention of field explorers; we refer to the careful inspection of the drift deposits of the northern states for possible evidences of the existence of preglacial, or interglacial man. Archaeologists recognize in Europe—though not with entire unanimity—two distinct stages of prehistoric culture, there marked by grade of perfection of stone implements, and designated as Palaeolithic and Neolithic. A class of American scientists have attempted to establish here a like distinction, claiming the discovery of rudely shaped stones in gravels, assumed to be the product of glacial action, as supportive of their hypothesis of man's

existence on this continent prior to its general glaciation. The discussion of this question is largely in the domain of Geology; but yet, its final solution will materially affect the very basis of the science of Archaeology. The evidences, to this time, produced by adherents of the belief that man was here before the ice period, are regarded as insufficient; and science has rendered the Scotch verdict of "not proven." But though it seems apparent that the stone art remains of the American aborigines represent a single culture stage only, it nevertheless will be well for observers to patiently scrutinize ancient moraines, drift deposits and caverns for traces of contemporary man.

We would call special notice to the monograph of Prof. Frederick Starr, Ph. D., in this number of *The Antiquarian* on "A shell gorget from Mexico," not only for its intrinsic merit, but also to offer a suggestion explanatory of the presence of similar specimens of exotic art discovered in mounds of the Mississippi valley.

It must be borne in mind that discs of marine shells and copper plates engraved with figures almost or quite identical with some of the sculptures of Mexico and Central America, found in our mounds, are very limited in numbers, entirely too few to establish a local culture status. Mr. Holmes thinks they must be the offspring of the same beliefs and customs, and the same culture as the art of Mexico. They surely are. What reasons have we to doubt their Mexican or Central American origin? A reasonable solution of the mystery of their presence in our territory is, not that they were manufactured here and represent the culture of this region at any period, but that they were imported, as were the Ohio Llama, the splendid obsidian blades of the Hope-

well mound, and other rare foreign products occasionally found in our mound deposits; coming to our Indians either as reprisals in warfare, or as propitiatory offerings by southern visitors, or acquired in the course of trade and barter.

From West Fames, N. Y., Mr. James Angus writes us in terms highly complimentary of this periodical, for which we feel profoundly grateful. He has for many years collected and studied Indian relics, with interest in this pursuit still unabated, now in the seventy-eighth year of his age. The good opinion and kind words of such veteran antiquarians as Mr. Angus are very encouraging.

In the January number of this periodical a correspondent residing on Friday Island, San Juan county, Washington, mentioned the exhumation from an old shell mound, on that island, of a human skeleton and that of a dog that no doubt had been buried together. Last fall when grading a roadway on the Sangamon Bluffs, in Cass county, Illionis, the plow invaded one of the numerous small sepulchral mounds that crown the peaks and ridges of that beautiful region and threw out the skeletons of an Indian and dog, which apparently had been together consigned to that earthen tomb to bear each other company in the final resurrection. The skeletons in both these instances were in the last stages of decay, but their interment was by Indians subsequent to their contact with Europeans. No instance of the burial of entire animals with human bodies by pre-columbian aborigines is recorded. Recent Indians, however, often practiced this mortuary custom, interring with the dead individuals of distinction all of their belongings, including favorite horses and dogs. A conspicuous instance of this cus-

tom is given by Catlin in the burial of the Omaha chief, Black Bird, whose dead body was placed astride of his war horse, on a prominent bluff overlooking the Missouri river, and enclosing both man and horse in an immense mound. From these, and other co-ordinate observations, it is to be inferred that the prehistoric Indian had no domesticated animals, and had not learned to tame the wolf and transform him into a dog and companion. For the horse and dog and sundry vices, he, in aftertime, bartered to the white man all of his landed possessions and became an outcast and dependent. The sharing of his grave with his dumb associates testifies his affection for them and reveals one of the very few refined sentiments of his nature

J F. S.

BOOK REVIEWS.

Prehistoric Ruins of Copan, Honduras. A Preliminary Report of the Explorations by the Museum of Ethnology, Cambridge, Mass.: 1891-1895. Published by the Museum.

Vague accounts had reached this country prior to 1839 of extensive ruins of strange stone edifices, and huge monoliths carved all over with weird human figures and curious glyphic characters, some standing erect and others prostrated and broken, in the dark solitude of dense forests on the Copan river, near the western frontier of the State of Honduras. This rumored discovery excited the keen attention of antiquarians throughout the civilized world, but few imagined the amazing magnitude of the great ruined city with its silent testimony of ancient grandeur and the skill and culture of its dusky builders; or formed any approximate conception of the grotesque

images and mystical records portrayed on those giant stones, until they were visited by John L. Stephens in the year above named, and the report of his observations, published in 1841, awakened a startling interest in all classes.

Since then Copan has been visited by several intelligent travelers, but no systematic examination and survey of its ruins was attempted until 1885, when Alfred P. Maudsley, of London, visited them and commenced his laborious and careful investigation of these, and other antiquities of Central America.

By the praiseworthy liberality of several wealthy citizens of Boston, New York and Philadelphia, the Peabody Museum of Ethnology was enabled to equip and send to Honduras each successive season in which work could be safely prosecuted in that climate, from 1891 to 1895 inclusive, competent parties to continue and exhaustively complete the researches of Mr. Maudsley. The above entitled monograph, a royal quarto pamphlet in form, of forty-three pages, with an elaborate plan of the ruins and many illustrations, embodies the general results of the Museum's explorations at Copan; and is the first of a promised series of similar reports, and other archaeological papers, to be issued from time to time in the future. The task assigned the Museum's agents at Copan has been faithfully executed to the minutest details, and they have given the public a clear and comprehensive description of those vast and wonderful remains. Much to their credit, in their exact measurements, they have spared us the infliction of the outlandish terms of the metric system, and very sens-

ibly recorded distances, lengths and dimensions in plain English miles, yards, feet and inches. The mechanical execution of this pamphlet is an admirable specimen of high perfection of the printing art, but its illustrations, chiefly photogravures, though truthful and accurate, are inferior to the superb drawings of Fred Catherwood in Stephen's books. We learn from this valuable report of the Peabody Museum that the Copan ruins are scattered over a level valley, seven miles in length by three in width, hemmed in by mountains all around. This enclosed plain is bisected by the tortuous channel of the Copan river, and, when discovered, was covered with large trees and an undergrowth of compact tropical shrubbery. Centrally located, on the banks of the stream, is the principal part of the ancient city, covering many acres with fragmentary walls, artificial stone-encased mounds and terraces, interspersed with sculptured figures and remains of great temples and various stone edifices, all jumbled together in such irregular and impenetrable confusion as to defy all attempts at reduction to any definite order of design, or known rules of architecture. No entire building is yet standing, and but few walls are more than a yard or two in height. Of the twenty-three known "Stellae," or sculptured monolithic monuments that have given these ruins their world-wide fame, but six are now in their original erect position, ten to twelve feet high, three feet in width and two in thickness. The others are fallen, and several of them broken in several pieces.

The prostration of these heavy columns, and almost total destruction of the massive stone structures and gigantic walls, can scarcely be due altogether to the gnawing

tooth of time and turbulence of the elements; severe and repeated seismic disturbances may have been among the causes of devastation that wrought this stupendous ruin. Copan was probably the seat of empire of the early Mayas. The natives now inhabiting that region have a tradition that it was built by a great chief who came there from the north, and who reigned, in gorgeous splendor, for many years, and then, with all his people, deserted the valley and returned to the country from whence he came. Indian traditions are, in the main, unreliable and valueless and unworthy of serious consideration.

All evidences of the shattered temples and palaces of the vast ruins establish conclusively the great antiquity of Copan, and justify the belief that it was abandoned long before the first foundations of Palenque or Uxmal were laid.

J. F. SNYDER.

The thirteenth annual report of the Peabody Museum refers to Mr. E. Volk's work in glacial terraces along the Delaware river, New Jersey. He has continued his explorations for several years, and as the subject of glacial man has been much discussed his observations are of special interest. Professor Putnam says:

"This research by Mr. Volk has confirmed the opinion which several archaeologists and geologists have held, namely, that stones chipped by man are found in the glacial deposits of the Delaware valley. Prof. Wright, from personal observation on the spot where Mr. Volk is exploring, regards the evidence furnished by this exploration as proving conclusively the existence of glacial man in America."

The Peabody Museum, having run short of funds, Mr. Volk is now investigating for the American Museum of Natural History, New York.

CORRESPONDENCE.

Elliott City, Md., Jan. 10, 1896.

Dr. J. F. Snyder:

My Dear Sir—In the criticism of my recent paper on "Primitive Methods of Drilling" in the January number of *The Antiquarian* I find two questions asked which I shall endeavor to answer: First, "did he ever attempt drilling with those long and slender specimens of flint or chalcedony, four to six inches in length, such as are found now and then in the Mississippi valley?" and second, "could he drill with them without breaking the implement?"

I believe I have used the various drills on and with every substance capable of supporting the weight of the shaft to which the point could be attached, and think the question is answered on page 681, referring to Fig. 69 and page 682, Fig. 72, both of which drills are of jasper, but as a further answer I would say: Such points could be used to the shaft revolved between the hands with comparative safety; to the strap drill such points would require delicate manipulation in any thing harder than wood or indurated clay beyond a depth of one-half or three-fourths of an inch. With the bow drill the danger of breaking the points is more likely than with the strap drill. With the pump drill the danger would be greatest, and such points would break likely at about one-half inch depth of stone. The question resolves itself largely into one of delicacy of manipulation, for even with the slightest loosening of the point the danger of snapping it increases in proportion to the velocity of the revolutions of the tool, and, if with a pump drill, in proportion to the weight of the drill disc as an added danger.

The long, slender drill blades were probably intended for boring the softest materials, but it must always be born in mind that every primitive tool was probably employed in many different ways.

I have repeatedly employed every substance I could think of or find which would support the shaft as a point, to all the drills, beginning with bristles and including steel. Very Truly, etc., J. D. MCGUIRE.

RECENT DISCOVERIES.

We have seen in New York papers frequent mention of Mr. John F. Matthews, who has been traveling about North and Central America for some years studying our monuments, etc.

From a letter written by friends it is stated that when he examined our January number he remarked that he would prepare a paper on "New Light on the Mound Mystery," in which he would "reveal his conclusions with regard to the ancestry of the American mound builders, expecting that the paper in question will provoke a storm of discussion in historical and archaeological circles."

That is just what those of us who have been "pegging away" at archaeological problems want, and the sooner Mr. Matthews publishes his facts and conclusions, the better for all concerned.

FAR AHEAD OF COLUMBUS.

The late Prof. Horsford of Harvard was laughed at by his fellow professors because he maintained that he had discovered on the banks of the Charles river in Cambridge, Mass., evidences of a Norse settlement, that of one Lief Ericson, who, he said, came to this country in or about 1000 A. D. Now come Dr. Valtyr Budmundsson, a Danish professor, and Mr. Gerard Fowke, a distinguished Ohio archaeologist, who declare that probably Prof. Horsford was right. They have found, by excavating in Cambridge, a footpath and traces of a building, all of which was certainly not the work of Indians, nor of French or English people. It is more than possible, they say, that these constructions were the work of the Norsemen. Far earlier than this, according to Chinese records which are regarded by scholars as authentic, a Chinaman visited Mexico and found there Buddhist cities.

RELIQS OF A SPANISH EXPEDITION SENT TO THE FLORIDA COAST BY COLUMBUS.

An extremely interesting article has appeared in the Atlanta Constitution, giving the following facts:

W. C. Zimmerman, Circuit Court Clerk of Citrus County, and an archaeologist of note, has just reached this place from San Carlos, Bay Islands, south of Ft. Myers, where, with a number of friends, he has been camping and hunting.

On one of the islands Zimmerman found the relics of a Spanish expedition sent out by Christopher Columbus from Cuba, when the great discoverer was Governor of that island.

While hunting, the men passed a low mound, and at Zimmerman's request an investigation was made.

After a little digging something hard was struck, and when unearthed it was found to be a complete suit of armor.

Further digging unearthed three more suits of armor. Zimmerman pried open the helmet of one of the suits and was shocked to see a skull. The entire suit was then opened, and was found to contain a skeleton. When the other suits of armor were opened they also contained skeletons. Four swords made in Toledo were also found near the armored skeletons.

Further digging brought to light an iron box filled with Spanish doubloons, easily worth \$6,000. A few blunderbusses and cutlasses of antique pattern, bearing the name of Sebastian Velasquez, and the date of 1500, were also unearthed.

After digging for some time another iron box was unearthed, which proved more interesting. In this box was found a portrait of a beautiful woman, painted on ivory, a medallion dated 1497, on which was the raised figure of Columbus, and a roll of parchment covered with writing.

Zimmerman, who is a fine linguist, saw that the parchment was a letter from Columbus to Velasquez, and related to an expedition which the latter was to lead from Cuba to explore the coasts of Florida.

The letter was one of instruction, and was signed by Columbus as Governor of Cuba. Zimmerman thinks that the Velasquez expedition was wrecked near San Carlos, and the sailors, being afraid to venture inland because of the aborigines, settled on the island, where they remained till they perished.

Zimmerman has with him the suits of armor, the parchment and other relics.

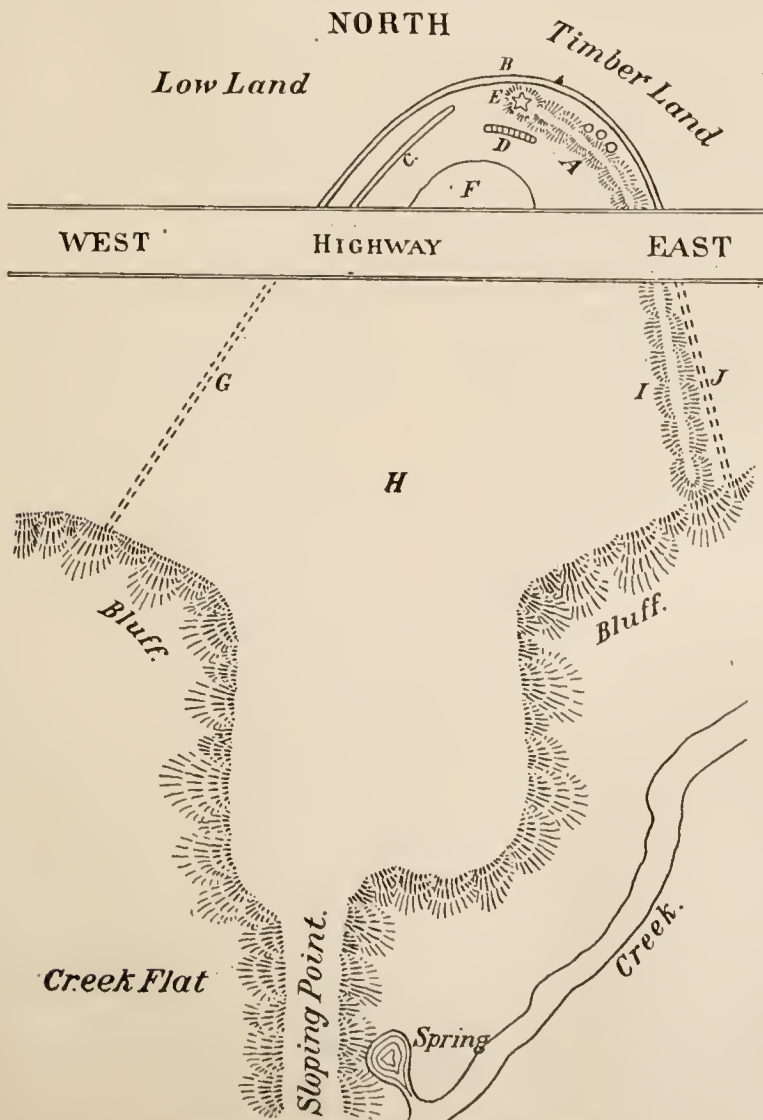
THE ANTIQUARIAN.

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An Ancient Fortification in Tompkins Co., N. Y.

*AN ANCIENT FORTIFICATION IN
TOMPKINS COUNTY, N. Y.*

In the extreme western part of Tompkins county, New York, about one-half mile east of the county line and one mile northeast of the village of Perry City, Schuyler county, are the remains of an ancient fortification, presumably of Indian origin.

About three-fourths of the enclosure (or what must have been an enclosure at some period) is on the farm of Mr. Ebenezer Hart; the southwestern part is on the farm of Mr. John Sherwood.

Very little seems to be known by those living in the vicinity regarding any relics of importance that have been found, except such as occur on all the camp sites throughout this section of the country.

The more important part of the enclosure is on unbroken ground, and has never been disturbed. I was informed, however, that a few years ago a skeleton was exhumed in the vicinity of the Fort, but the exact point I could not ascertain.

That this earthwork is of great age, is plain to be seen, as near the end of the embankment there was standing until a few years ago a huge pine tree, the stump (E) of which at the present time measures $3\frac{1}{2}$ feet in diameter. This tree stood squarely on top of the ridge of earth. There were three others standing partially on the ridge, a short distance farther to the east; these were smaller, about 18 inches in diameter. All of them have undoubtedly grown there since the erection of the Fort.

This ancient village site was chosen with great care, both as regards easy fortification and access to water. It occupies a point of land formed by the windings of a creek, and extends north some distance from the creek. The bluff on the creek side is from 20 to 30 feet in height and formed

a natural safeguard from an enemy. On the north and a part of the east and west sides, they found it necessary to protect themselves by means of the fortification.

A highway divides the enclosure near the north side, and all that portion on the south side of the highway has been under cultivation since an early day; thus nearly all traces of the Fort are obliterated. North of the highway the enclosure is in a timber lot.

The construction of this fort differs greatly from any which I have ever examined. As shown on the diagram, the wall of earth (A) is three feet high and the average width at the base is ten feet; it is rounded on the top.

From the western end to the highway, it measures 144 feet. That it crossed the highway and extended to the bluff along the creek, there can be no doubt, as it is still higher along the line (I) even after years of cultivation. The distance from the highway to the bluff is 180 feet.

Outside of this embankment, in the woods on the north, is a ditch (B) distant from the ridge 10 to 30 feet; this has the appearance of having been used for stockade purposes, as it is about one foot wide and at present about six inches deep, and is made up of round depressions so close together that they have the appearance of a continuous ditch. The ditch (B) extends from the road on the west, entirely around to the road on the east.

Beginning near the western end of the embankment (A), is a similar ditch (C), running nearly parallel with the ditch (B), and extending to the highway. The two are exactly alike in appearance; ditch (B) measures 370 feet in length, and ditch (C) 120 feet in length. There is a short ditch inside the enclosure, shown at (D), 48 feet long and one foot wide; this is filled with stones about the size of one's fist, some of them being burnt.

Inside the enclosure the dirt has the appearance of having been burned, and there are many burned stones and fragments of pottery scattered about. On the south side of the highway, the part (H) enclosed by dotted lines (G) and (J), and extending to the bluff, has been entirely burned over, and fragments of pottery and animal bones are very numerous over the entire surface. Stone implements in considerable numbers were picked up on this part years ago. The eastern portion was freshly plowed, but I succeeded in finding only a small slate celt, an arrow point of the small, stemless variety, and several broken hammerstones, mullers and celts. I found a fragment of white pottery, composed almost entirely of ground shell, with scarcely enough clay to hold the particles together. It was nicely marked, and is the only piece of the kind I have ever seen. Mr. Sherwood informed me that he found many fine stone relics on the field years ago.

Leading down from the extreme point on the south is a natural, narrow ridge, which served as an easy path to a fine spring of water (K) situated at the foot of the hill. This was undoubtedly where they secured their supply of water.

My theory is that at the time this site was inhabited, the ditches which are so plainly visible in the woods, must have extended to the bluff along the creek on both the east and west sides, according to dotted lines (G) and (J). I am led to think thus for the reason that the burnt earth occurs at no place except between where the ditches must have traversed in a direct line to the bluff.

The ends of the ditches and also the embankment come squarely up to the highway, and I think this of itself shows that they must have extended to the bluff on the south.

Two miles south of this place, on the east side of a small creek, is an immense Indian village site or camp-ground, covering several acres, where I have found many fine stone relics.

The strange part of it all is, where did the people who inhabited this region (undoubtedly in considerable numbers) bury their dead? There are no burial places within many miles of either place, to my knowledge. At (F) in the enclosure first mentioned, is a portion of high ground which may be a cemetery. I did not do any excavating, but am satisfied that many fine relics (if no graves) would surely be found if the ground in the enclosure could be properly worked over.

F. E. HERRICK.

RELICS OF THE MANHATTAN INDIANS.

On several occasions during the last few years discoveries of Indian remains have been recorded from Manhattan Island and the districts soon to be included in Greater New York. With a view to the recapitulation of these finds, this paper has been written.

To the writer's knowledge no systematic researches had been undertaken by any explorer within New York City prior to the spring of 1890, when the accidental finding of the fragments of a beautiful jar at Inwood suggested the possibility of other specimens of aboriginal handiwork in that vicinity. The vessel was found in an excavation made near the present Dyckman street, at its junction with the proposed Sherman avenue. Quantities of decaying oyster shells on and near the surface of the ground, indicated an Indian feasting place, and an examination of the deposit reveal-

ed split bones, bits of rude pottery, and a number of arrow points of quartz. The character of the place being apparent, an archaeological enthusiast made extensive excavations and recovered a number of human skeletons which his fancy connected with the objects found upon the surface; but which are without doubt the bones of early settlers of the valley; the graves being marked with "head-stones," and remembered by old residents as part of a colonial cemetery.

Shortly after the discoveries at Dyckman street, an extensive deposit of oyster shells was examined near the extreme northern end of Manhattan Island, at a place commonly known as "Cold Spring," a little nook on the southerly side of Spuyten Duyval creek, where the creek curves to the south before it empties into the Hudson river. The suspicion that the shells marked the site of an Indian village was verified by the finding of many objects of aboriginal art associated with the debris from ancient feasts. Doubtless it was from this village that came on October 9, 1609, one hundred Indians who set out in their canoes and attacked Henry Hudson on his return down the river, as he was passing the mouth of Spuyten Duyval creek. About fifty yards from the shore, and beneath some massive rocks, was found large quantities of broken pottery, deer antlers and the bones of various wild animals and birds associated with stone implements, all of which were buried from sight by the earth which had filtered for ages down from the bluff, of which the rocks themselves were once a part. Much credit is due to Mr. A. C. Chenowith, whose sagacity lead him to suspect the presence of these remains where they were found. Nearby Mr. Chenowith found a number of white clay tobacco pipes, marked "R. Tippet,"

which are identical with those discovered in some Indian graves in northern New York. Such pipes are also found among the refuse thrown out from a colonial house which stood at 211th street, near Ninth avenue. Mr. Robert M. Hartley, of Amsterdam, N. Y., has found "R. Tippet" pipes in Montgomery county, both in graves and upon the sites of native villages and workshops; he found also fragments of stems and portions of the bowls of white clay pipes upon the Castle sites which date back from 1640-1700.

A prolific source of surface finds has been the garden situated on the north side of Academy street, between Cooper and Seaman avenues. Another garden where specimens are found is at Isham street, near its Junction with Seaman avenue. These gardens have yielded in all about two hundred arrow points, besides about a dozen pitted Hammer-stones and an equal number of grooved sinkers. Oyster shells are abundant in both gardens, though some of the shells in the former are certainly attributable to the British soldiers once quartered there, it being the site of the camp of the Seventeenth regiment of Foot. Midway between these two gardens, and on the line of Emerson street, there was uncovered a pocket containing about twenty bushels of oyster shells, mingled with which were some pieces of Indian pottery, a few fish bones and small fragments of a lobster shell in the last stages of decay. Within a few yards of this pocket there was found at the same time a human skeleton. It could not, however, be positively connected with the shells, though it is conjectured that the debris contained in the pocket spoke of a burial feast.

At the mouth of Sherman's Bay and along the west bank of the Harlem river, on the line of Ninth avenue, from 201st

street to 210th street, arrow points and other minor relics appeared during the work of grading. But by far the most important find yet made was that of a dog's grave at 209th street, on the east side of Ninth avenue. The animal had been buried at the top of a small knoll, and in an excavation about two feet deep. The body had been placed in the grave at full length, and was covered with shells to within a few inches of the surface. Mingled with the shells were fragments of two varieties of Indian pottery. Shortly after this discovery a second canine burial was noted two hundred feet from the first. No positive information can be given as to the latter burial—the grave having been disturbed and the bones partly scattered by the workmen engaged in grading for the new street; but the first skeleton was still almost intact when the grave was disclosed on the face of a bank of soft earth. The animal was covered with whole shells, the greater number of which were of the oyster, although there were also mingled with them a few clam and muscle shells. Some of the shells when taken from the mass were still joined to their mates; it is therefore conjectured that the shell fish had been eaten on the spot, or thrown unopened into the grave to serve as a repast to the departed dog while on his way to the happy hunting ground. Other discoveries of Indian dogs' bones were made at Van Cortlandt park by Mr. J. Bradley James; and also at "Burial Ridge," Staten Island, by Mr. M. H. Saville and George H. Pepper. At both the places mentioned the dogs were found interred with human remains.

Mr. Pepper's find of a number of hollow, pointed arrow tips made from deer antler, is considered important by Mr. Saville, of the American Museum, who says they indicate a rather unusual degree of advance-

ment among the former inhabitants of the island. A deer antler point identical with these, was found by the writer in the great Sheel-heap at "Cold Spring," on Spuyten Dwyval creek.

In addition to the localities specified on Manhattan Island, other sites of Indian villages or camps of less importance have been explored. Arrow points and hammers were found near the vicinity of Elwood street; at 193rd street, near Eleventh avenue (Fort George); and on the high ground along Ninth avenue, near the new Columbia College. Large quantities of oyster shells were disclosed by the grading of Dyckman street, near the Hudson river, and there are still quantities of undisturbed shells about fifty yards south of the street, and on the shore of the little bay below Inwood Station; this latter deposit has been partially explored and some stone implements and rude fragments of pottery were found there.

"Ceremonials" are almost entirely lacking on Manhattan Island; one rude sample of the pickaxe variety was discovered at Isham street. The only aboriginal pipe—a sculptured soapstone specimen—was found at Elwood street.

In view of the many indications of long continued occupancy by considerable numbers of aborigines, it is a matter of surprise that no graves have as yet been located on Manhattan Island; some wonder is also expressed that no wampum has as yet appeared. Shell wampum was abundant, and had a recognized value as money under the Dutch control. All indications suggest that the island was abandoned by the natives shortly after it was sold to the Dutch.

THE FOOD OF CERTAIN AMERICAN
INDIANS.

LUCIEN CARR.

(Concluded.)

Successful as these hunts and fisheries are believed to have generally been, they were carried on at set times and had reference to the game and fishes that were then in season. Consequently they did not include the hundreds of other birds, beasts and fishes that were not hunted at stated times, but were made to contribute to the Indian's larder. Of these it is unnecessary to speak at length, and the subject may be dismissed with the simple remark that there seems to have been nothing in the way of fish, flesh or fowl that some Indians did not at some time eat. Bear, buffalo and beaver; moose, elk and deer; geese, turkeys and pigeons; fish of all kinds, including whales, seals,¹⁴² eels, oysters and shell fish generally, to say nothing of snakes, crocodiles, locusts, muskrats, etc., etc.,¹⁴³ were all eaten with apparent relish and seemingly without preference for any one kind. Even human beings were unhesitatingly "thrown into the kettle"¹⁴⁴ and devoured, though the flesh of Europeans is said to have been too salty to suit their taste.¹⁴⁵

¹⁴²Williams' Key, Rhode Island Hist. Soc. Coll., Vol. I., p. 103.

¹⁴³Laudonnière, p. 12: Paris, 1853. Father Gravier, in Shea's Early Voyages, p. 132. Dumont, *Memoires*, I., pp. 105 and 109: Paris, 1753. Charlevoix, V., p. 234. Father Allouez, in *Discovery, etc., of the Mississippi*, p. 71. Cabeza de Vaca, pp. 79 and 103. Bartram, "Florida," p. 267: Dublin, 1793. Beverly, "Virginie," pp. 244, 245: Amsterdam, 1707. Loskiel, p. 66. Heckwelder, p. 196. Lescarbot, III., 724, 725.

¹⁴⁴Narrative of Father Membré, p. 175. Dumont, "Mémoires sur la Louisiane," I., p. 255. Father Marest, "Journeys," pp. 219, 221, in *Kip's Jesuit Missions*. Perrot, pp. 52 and 242: Paris, 1864. Josselyn, "Two Voyages," pp. 295, 310, in 3d Series, *Mass. Hist. Coll.*, Vol. III. Lafitau, IV., p. 6. Heckwelder, p. 199. *Relation*, 1626, p. 3; 1632, p. 11; 1636, p. 121; 1637, p. 118. With but few exceptions the above references especially those from *Relations* relate to the treatment of prisoners, though the same can hardly be said of the following account, which we find in the relation, 1642, p. 47: "Ils prirent nos petits enfans, les attachèrent à une broche, les

Of course when off on these hunting and fishing expeditions, a portion of their daily take was used by the hunters and their assistants. What was left, both of fish and game, was dried, either in the sun or on a hurdle over a fire, and set aside for future use.¹⁴⁶ Among other things, eels and even oysters were so prepared.¹⁴⁷ It was also at these times that they tried out the fat of such bears, buffaloes, seals, pigeons, fishes, etc., as they took, and preserved it in skins, jars, gourds, etc., which were buried. Sometimes, according to Adair, the southern Indians mixed sassafras and wild cinnamon with the bear's oil, and in this shape it is said to be not only "good for the hair but preferable to any oil for any purpose." Smooth Florence, he adds, "is not to be compared in this respect with rough America."¹⁴⁸

In regard to their cooking, there is not much to be added to what has already been said. The kettle they had, of course; and it was but one regular meal cooked in the wigwam each day,¹⁴⁹ yet the Indian was accustomed to eat whenever he felt like it.

presentèrent un feu et les firent rostir tout vifs devant nos yeux. . . . Apres qu'il eurent fait mourir ces pauvres petits par le feu, ils les tirèrent de la broche où ils estoient liez, les jetterent dans leurs chaudières, les font bouillir et les mangent en notre presence." Cf. Wyman, *Shell Mounds of Florida*, pp. 67 et seq.: Salem, 1875. Adair, pp. 135, 199, 387: London, 1775. Segard, p. 152.

¹⁴⁵Charlevoix, VI., p. 16: Paris, 1744.

¹⁴⁶Hariot, "Narrative of the First Plantation of Virginia," plate XIII., and text: London, 1893. Williams' Key in *R. I. Hist. Soc. Publications*, I., p. 103. *Relation*, 1633, p. 2, and 1634, pp. 35 and 41: Quebec, 1858. Laudonnière, p. 12: Paris, 1853. Sagaré, I., p. 177, and II., p. 220: Paris, 1865. La Hontan, I. plate, p. 174: A la Haye, 1703.

¹⁴⁷Dumont, II., p. 274: Paris, 1753. Lawson, "Carolina," p. 209: London, 1718. De Vries, p. 139. Champlain I., p. 165: Paris, 1830.

¹⁴⁸Adair's "History of the American Indians," p. 415. Cf. Lawson, "Carolina," p. 207: London, 1718. Dumont, "Mémoires," I., p. 77.

Moreover, according to their ideas of hospitality, "if a man entered an Indian house, whether a villager or tribesman, or a stranger, and at any hour of the day" or night, "it was the duty of the women to set food before him,"¹⁵⁰ and this could not have been done unless a supply was always kept on hand, or was in course of preparation. In addition to the boiled dishes of which we have spoken, and the stews which the kettle enabled him to cook, the Indian was in the habit of broiling his meat upon coals, or roasting it on wooden spits, placed before the fire and turned as the cooking progressed, just as we do, to-day, when camping out.¹⁵¹ Some of the dishes prepared in this way are spoken of in high terms, roasted turkey with bear oil being an especial favorite, as was also the case with dried venison pounded in a mortar and served with the same sauce.¹⁵²

Other dishes and food preparations they had, as for instance the dog,¹⁵³ the intestines of a deer,¹⁵⁴ etc., which might have been

¹⁴⁸Statements on this point differ, but the weight of evidence inclines this way.

¹⁵⁰Morgan, *Houses and House-life of the American Aborigines*, pp. 45, 51, 61: Washington, 1881. ". . . lesquelles y touchent à toutes les heures marquées par leur appetit, soit le jour, soit la nuit. L'appetit est chez eux l'unique horloge sur laquelle sont montées toutes les heures du repas": Lafitau, *Moeurs des Sauvages Américains*, III., p. 80: Paris, 1724. Williams' Key in R. I. Hist. Coll., I., p. 36: Providence, 1827. Relation, 1634, p. 32: Quebec, 1858. "Their cookery continues from Morning till Night, . . . not seldom getting up at Midnight, to eat." Lawson, "Carolina," p. 207. Loskiel, p. 66: London, 1794.

¹⁵¹Beverly, "Virginie," p. 243: Amsterdam, 1707. Adair, p. 415. Heckwelder, p. 196. Carver, *Travels*, p. 233: London, 1778. New England's Prospect, p. 75.

¹⁵²Lawson, "Carolina," p. 207: London, 1718. Heckwelder, p. 196: Philadelphia, 1876.

¹⁵³Champlain, I., p. 377. Lafitau, III., p. 171. Carver's "Travels," p. 278. Perrot, pp. 15, 38. Father Rasse, in Kip's *Jesuit Missions*, p. 36: New York, 1846. Du Pratz, II., p. 409. Knight of Elvas, in *Hist. Coll. Louisiana*, passim. Marquette, pp. 24 and 48, in *Discovery and Exploration of the Mississippi*. Charlevoix, V., p. 320: Paris, 1744.

mentioned, just as it would have been interesting to note the Indians' method of saying grace,¹⁵⁵ of marrying their nets,¹⁵⁶ of propitiating the manes of the bear,¹⁵⁷ and other ceremonies and observances belonging to this phase of life, but it is believed to be unnecessary. Enough has been given to enable us to measure the advance of the Indian along this particular line of development; and judging from the quantity and quality of the products of his fields, from the many ways of cooking his food, and from the relatively elaborate character of the table ware used in serving it, we may safely say that he had reached a degree of progress far in advance of what we understand by the term savage. Indeed, in each and every one of these particulars, he had nothing to fear from a comparison with his white neighbor. So, too, in his system of providing for the poor and needy,¹⁵⁸ for certain tribal expenses, and for punishing laziness,¹⁵⁹ he displayed a knowl-

¹⁵⁴Beverly, "Virginie," p. 245: Amsterdam, 1707.

¹⁵⁵"The Indian women always throw a small piece of the fattest of the meat into the fire when they are eating, and frequently before they begin to eat." Adair, p. 115: London, 1775. Cf. Sagard, I., p. 124: Paris, 1865.

¹⁵⁶Jesuit Relation, 1636, p. 109: Quebec, 1858.

¹⁵⁷Perrot, pp. 66 et seq.: Paris, 1864. Heckwelder, p. 255: Philadelphia, 1876. Charlevoix, V., pp. 169, 443: Paris, 1744. Relation, 1637, p. 52; 1672, p. 38: Quebec, 1858. Bartram (John), "Observations," p. 25: London, 1751.

¹⁵⁸See note 2, p. 14. Cf. as to widows and orphans, Williams' Key, p. 452. Lawson, "Carolina," pp. 178 and 179: London, 1718. Jesuit Relation, 1634, p. 29: Quebec, 1858. Charlevoix, VI., p. 13. See, also, Timberlake, "Memoirs," p. 68: London, 1765, and Lawson, p. 178, for an account of what may be termed a charity festival. "Hunger and destitution could not exist at one end of an Indian village or in one section of an encampment while plenty prevailed elsewhere in the same village or encampment." Mergan House-life, p. 45: Washington, 1881. Lescarbot, III., p. 727: Paris, 1866.

¹⁵⁹"The delinquent is assessed more or less, according to his neglect, by proper officers appointed to collect these assessments, which they strictly fulfill; without the least interruption or

edge of social science far beyond his condition; and he certainly showed commendable foresight in his efforts to guard against the proverbial rainy day, by curing and preserving his surplus stores of game, fish and other kinds of food. That these supplies sometimes fell short is, of course, well known. The presence of an enemy, or the failure of his crop or of his hunt might, at any time, precipitate a condition of scarcity, such as occasionally occurs in the frontier life of to-day. His ideas, too, of hospitality and good breeding,¹⁶⁰ or it may be a desire for popularity,¹⁶¹ or possibly some medicinal, social, or religious function¹⁶² may have led to a certain rude magnificence in his way of living that does not comport with our ideas of prudence, though something not unlike it is common enough amongst those who are supposed to act, if not from higher motives, at least from a better knowledge. Moreover, to the credit of the Indian be it said, his prodigality injured no one but

exemption of any able person." Adair, "History of the North American Indians," p. 430: London, 1775. ". . . do not allow any one to be idle, but to employ themselves in some work or other." Lawson, "Carolina," p. 179: London, 1718. Cf. Hawkins, "Sketch of Creek Country," p. 35: Savannah, 1848.

¹⁶⁰Morgan, in *Houses and House-life of the American Aborigines*, Washington, 1881, treats this subject very fully, and the reader is referred to that publication. "It is a strange truth that a man shall generally find more free entertainment and refreshing amongst these Barbarians, than amongst thousands that call themselves Christians": Williams' Key, in *Rhode Island Hist. Soc. Coll.*, Vol. I., p. 36. Cf. Perrot, Chap. XII.: Leipzig et Paris, 1864. Sagard, "Voyage des Hurons," I., p. 77: Paris, 1865. Relation, 1634, p. 64. Heckwelder, "Indian Nations," pp. 101, 148: Philadelphia, 1876. Charlevoix, VI., pp. 11 and 13: Paris, 1744.

¹⁶¹"Ils font ces festins quelque fois purement par magnificence et pour se faire renommer." Relation, 1636, p. 112, and 1634, p. 38: Quebec, 1858.

¹⁶²Of their extravagance at feasts, funerals, etc., see Williams' Key, pp. 112 and 162, in Vol.

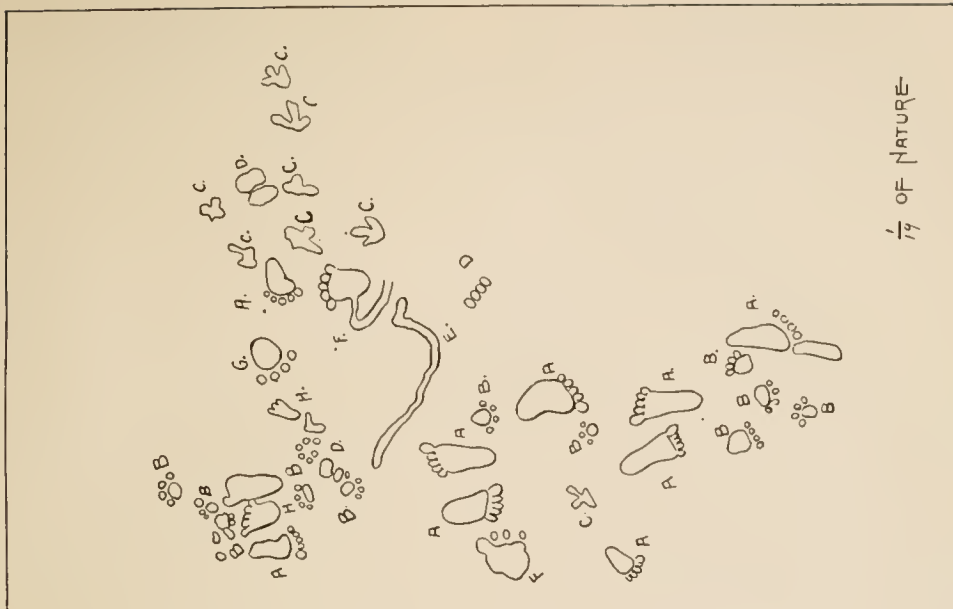
himself; and when we consider that his position in the village and tribe depended, in good part, upon this very prodigality¹⁶³—that according to his ideas, riches consisted not in what he had, but in what he gave away,—it will be seen that even in what is sometimes termed a brutal and wasteful indulgence, he may have been actuated by motives that are recognized as worthy and proper by civilized gentlemen.

That he was a hunter, and as such occupied a place in the first or lowest stage of development as we have marked it out, is most true. It is, also, true that he was something more, for he was, in a small way, a farmer just like his white neighbor. Indeed, so far as the comforts and conveniences that belong to this condition of life are to be regarded as a measure of progress, he did not materially differ from the advance guard of the band of pioneers that crossed the Alleghanys and won the West to civilization.

I., R. I. Hist. Soc. Collections. Lescarbot, "Histoire de la Nouvelle France," III., p. 848: Paris, 1866. Sagard, "Voyage des Hurons," p. 102: Paris, 1865. La Hontan, "Travels," II., p. 127: A la Haye, 1703. Heckwelder, "Indian Nations," pp. 270 et seq.: Philadelphia, 1876. Charlevoix, VI., pp. 107, 111, 112: Paris, 1744. Relation, 1636, pp. 11 and 112; 1637, p. 108. Perrot, Chap. VIII.: Leipzig et Paris, 1865. Lafitau, "Moeurs des Sauvages Américains," pp. 113, 122, 162, etc., etc.: Paris, 1724. Laudonnière, "Histoire de la Floride," p. 11: Paris, 1853. Sagard, "Voyage des Hurons," p. 194, and Chap. XXII.: Paris, 1865.

¹⁶³"L'une de leurs grandes injures parmy eux, c'est à dire; Cet homme aime tout, il est avare." Relation, 1634, p. 29: Quebec, 1858. Cf. Adair, "History North American Indians," p. 17: London, 1775. Loskiel, pp. 132 and 140: London, 1794. According to Long, Expedition, II., p. 189, an Oto who has given away property to the amount of one hundred dollars can have the blue mark tattooed on the forehead of a female relative. The same is true of the Omaha, among whom, so I am told by Miss Fletcher, it is regarded as a mark of honor.

NORTH.



1/7 OF NATURE

No. 2.

PICTURED ROCKS AT BARNESVILLE, OHIO.

NORTH.



1/20 of Nature.

No. 1.

PICTURED ROCKS AT BARNESVILLE, OHIO.

PICTURED ROCKS AT BARNESVILLE, OHIO.

In many places within Ohio rude effigies of man and animals have been found carved or pricked into the surface of the rocks. They are most abundant in the eastern half of the state, where the coal measures furnish large blocks of sand-rock, which were well adapted for cutting and are to a great extent imperishable. The figures were sunk into the stone by a sharp-pointed tool like a pick. In the Barnesville rocks the impression left by this pick is plainly visible and is similar to those found on the rough-hewn stone of our masonry. This tool has not been found in the form of a pick, and was probably only a small angular stone, held in the hand.

It has been found that sketches of these impressions, even by good artists, are so efficient in accuracy as to be of little value. The only exact way of getting a true outline is by cleaning out the channels sunk in the rock, painting them, and pressing a sheet of muslin into the freshly-painted depressions. This may be photographed to the size desired for engraving, and in this way an accurate facsimile may be obtained. Those mentioned below were traced and reduced in this manner.

The picture rocks I am about to describe are located on the lands of Robert G. Price, southwest of Barnesville. They were found in 1856 by a son of Mr. Price. This young man was then an ardent student of geology, and was driven to an examination of the rocks of the neighborhood by reading of the Connecticut bird tracks.

Although these rocks have for many years been exposed to the erosions of the weather, yet they are so placed that they are in an excellent state of preservation. The rocks on which these figures are picked are of a variety abundantly developed in this region. There are ten fragments containing these sculptured figures, but I shall describe only the two largest and best preserved.

No. 1.—This is the largest, averaging two feet above the alluvial deposit, in which a large portion of its seems to be imbedded. It has an exposed, irregular surface of seventy-five square feet. There are several human foot tracks on this surface. The smallest are four inches in length, and the deepest being a little over three-fourths of an inch, while the largest, fourteen and one-half inches, were scarcely perceptible. Of the bird-tracks, I only found six in regular succession, as if intended to represent the tread of the same bird. Each step was regular, being about five inches apart. The depth of these tracks were from three-fourths of an inch to a depth merely discernable. There are a few bear and buffalo tracks, the latter measuring from two to five inches. Four human faces are outlined, measuring in breadth three and a half to five and a half inches.

No. 2.—This one is about eight inches above the earth level, with an exposed surface of forty-five square feet. There are carved in this rock eight human foot-prints and several animal tracks, each being of about the same size. It appears as if the artist had intended to convey the impression that a person accompanied by a dog had crossed and recrossed the rock. The tracks are all impressed on the rock one-half inch deep, and the human foot prints are nine and three-fourths inches in length. On the balance of the rock are sculptured several other human tracks (varying from four to fourteen and one-half inches in length), serpents, numerous bird, buffalo and bear tracks.

Below I give a reduced impression of each of these rocks and some of the impressions classified. In taking this impression there were many indistinct figures that could not be copied, but they resemble the tracks of men and animals overlying each other.

Pictographs such as these have been found east of the Mississippi valley in several places. But they are very different from those of the Cliff Dweller country.

EXPLANATION OF PLATES.

Rock No. 1.

- A—Human foot.
- A'—Human foot; 14 1-2 inches.
- B—Probably the fore foot of a bear.
- C—Buffalo tracks.
- D—Bird tracks.
- E—Outline of human face.
- F—Snakes, or portions of them.
- G—Probably stars.
- H—Resembles the spread-out skin of some animal.
- I—Dog or wolf tracks.
- J—Circles.
- K—Imperfect figure.

Rock No. 2

- A—Human footprints, about 9 3-4 inches in length.
- A'—Human footprints.
- B—Dog tracks; all same depth.
- C—Bird tracks.
- D—Buffalo tracks.
- E—Snake (probably).
- F—Imperfect figure.
- G—Large type of dog or wolf tracks.
- H—Bear tracks.

WILLARD B. DOBBINS.

The Bureau of American Ethnology is to send an expedition to study the survivors of the Sumas and Mansos, who live on the west Rio Grande, near El Paso. These tribes were numerically strong at the time of the Spanish conquest, but have gradually dwindled until but a miserable remnant remains. It is thought that much of ethnological interest will be ascertained from a study of them.

C. L.

MOUND IN COWLEY COUNTY,
KANSAS.

Recent excavations made into the prehistoric mounds found on the Beaver farm, in Cowley county, Kansas, have brought to light the fact that the largest of them is a "sacrificial mound," and the explorers have uncovered a sacrificial altar of peculiar pattern and religious significance. The investigators, having tunneled into the interior of the mound, came upon a number of stones so arranged as to form a vault or a small chamber. After removing these stones they found an empty space of little more than a foot in depth, where they came upon ashes. Mixed with these were found a few charred pieces of human bone, such as a femur of a child, two vertebrae—the axis and atlas. This layer of ashes varied from two to six inches in thickness. The explorers say that immediately beneath the layer of ashes, and about eight feet below the surface of the ground, was presented a reddish brown cement. This was several inches in thickness and resting upon and imbedded within it was unearthed a sacrificial stone altar. This altar consisted of two large stones, peculiarly fashioned and wrought so as to present, in the position found, a basin—or, more properly, a perfectly-formed pelvis, with the pubic arch of the same formed so that each segment met its fellow with a nicety that seemed marvelous; the body of the two stones being about seven inches in thickness, two feet in length, twelve to fourteen inches in width, but tapering toward the arch, the arch being not more than one-half inch in thickness and about two and a half inches in breadth. From the center of the body of the stone outward to its extremity, it tapered gradually by peculiar swells and depressions toward the flaring rim of the pelvis. Where it was joined to the larger stone was found a stone somewhat smaller than the other two, and resembling a human heart. This whole altar was cemented firmly to the solid rock bed, and beneath this bed lay a perfectly smooth and flat

surface of native limestone. This altar was the most sacred altar, in the opinion of Dr. C. S. Aker, who was the moving spirit in the investigations. He says they made it to represent those portions of the human body which at the earliest dawn of history were considered sacred, namely, the pelvis and heart. Near the altar was found a stone war club, which was evidently used about the time a sacrifice was offered up.

The "sacrificial mounds" also yielded up many other interesting relics. Stone hammers, flint hatchets, flint knives, stone pipes, portions of necklaces, arrow points, spear heads, bones of animals and men and various pieces of pottery. One of the mounds nearby was explored recently and an ancient grist mill, nearly complete, was discovered. It consists of a large twelve-sided stone, on which the corn or other grain was placed, and two wedge-shaped stones, about ten inches long, evidently used for grinding the grain. Both the large stone and the smaller ones are considerably worn, showing signs of long use. The mill is made of coarse, gray, porous stone, full of little holes, very much resembling pumice stone. No stone of the same kind exists here at present. Of pottery, quite a collection was found. A jar found in the "sacrificial mound" was so nearly perfect that the shape can be easily seen. It is graceful, with a fancy roped top, and is a superior piece of workmanship. The greater part of the pottery is rude and coarse, little effort having been made, apparently, toward grace or art in the manufacture. One large piece of pottery was found, however, with a rude attempt at decoration on it, the decoration consisting of lines and dots drawn on the surface of the jar. Another piece of pottery deserves special mention. It is highly decorated and colored, and a very superior piece of work. The decoration consists of three parallel lines, one of blue and two of red, running around the pottery at the top. The rest of the piece is light yellow and the material composing it is light and fine, making a

very handsome piece of pottery. The shell of a turtle was found in the mound and the shells of several fresh water mollusks.

There are several mounds near the "sacrificial mounds," all of which are being explored with interesting results. The above account is substantially as given by Dr. Aker.

C. P. JOHNSON.

*FRESH RELICS OF GLACIAL MAN AT
THE BUFFALO MEETING OF
THE A. A. A. S.*

1. The first paper upon this subject was presented by Professor G. Frederick Wright, detailing briefly the results of a single day's exploration at Trenton, N. J., under the guidance of Mr. Ernst Volk, who is continuously carrying on similar explorations under Professor F. W. Putnam for the Peabody Museum at Cambridge and the Central Park Museum, New York City. Professor Wright was requested to select his own ground upon the Lalor farm, where permission has been given for exploration, and a surface of a depth of three feet would be dug over in his presence. The point selected is on the bluff of the terrace of glacial gravel upon which the city of Trenton is built, a mile or more south of the center of the city. The bluff here facing the river is about fifty feet above it, and the terrace stretches back in a dead level for a mile and a half. The situation is such that there was no chance for surface wash to have remodified the deposit. In the near vicinity were boulders two or three feet in diameter resting upon the surface, or slightly below it, showing the ordinary conditions of deposition in connection with floating ice which characterized the whole delta terrace at Trenton, and which have been so often described by the geologists who have visited the region.

A trench three feet deep and three feet wide was dug from the face of this bluff backwards about thirty or forty feet. The upper twelve inches of this trench consisted of sand discolored with vegetable decomposition, which had evidently been dis-

turbed. In this stratum there were found two flint arrow-heads or spear-heads, one argillite chip, and one flint chip, together with a fractured pebble, four pieces of pottery, and a piece of charred bone.

The lower two feet of the excavation, except where interrupted by a pit, consisted of compact sand distinctly stratified, which had clearly been undisturbed. In this was found, at varying depths, one imperfect argillite implement, about three inches long and an inch and a half wide, and a quarter of an inch thick, with five unrolled and angular fragments of argillite, two of which bore pretty clear evidence of having been chipped by human hands. These were the only fragments. There were no chip-pings or fragments of flint or jasper in the lower two feet of the excavation.

This brief paper of Professor Wright was but the prelude to bring out from Professor Putnam a fuller statement of the results of Mr. Volk's work on the Labor farm. For two years Mr. Volk has been carrying on similar excavations over adjoining parts of the farm where the situation is similar to that described, and with corresponding results. Flint and jasper implements and flakes are abundant in the upper twelve inches of the soil, while no flint or jasper occurs in the lower two feet of undisturbed sand and gravel. A large number of boxes of implements and fragments accumulated by this work of Mr. Volk have been sent up to the museums above mentioned; but, owing to the lack of time, Professor Putnam has not yet opened them and published the results. But in preparation for this meeting Professor Putnam had requested Mr. Volk to pursue further investigations and send the results to him at Buffalo. These were presented by Professor Putnam in a paper from Mr. Volk describing between thirty and forty argillite implements and fragments which had been found in his subsequent excavations in the undisturbed lower two feet of sand, as described in Professor Wright's excavation. As in that case,

so in this, flint and jasper were abundant in the upper twelve inches, but argillite was the only chipped and angular material found in the lower two feet. A large diagram accompanied Mr. Volk's description in which the position of each one of these argillite fragments was found. The box was then opened for the first time, and the fragments presented for examination. Of the artificial character of many of them there was not the least question on the part of any one present.

The importance of these discoveries as confirming the evidence of glacial man at Trenton heretofore presented can readily be perceived. It coincides with that presented by Professor Putnam and Dr. C. C. Abbott and Mr. Volk, going to show that there was a clearly marked succession in the human occupancy of the Delaware Valley, indicated, first, by the sole use of argillite for implements, followed by a gradual and almost complete transition to the use of flint and jasper in later times. (See Putnam's report to the Peabody Museum in the Proceedings of the American Antiquarian Society, October, 1889, p. 11, and Observations upon the Use of Argillite by Pre-historic People in the Delaware Valley in Proceedings of the American Association for the Advancement of Science, by Ernest Volk, vol. xlii, p. 312). It also sweeps away at once the ingenious theories of Professor Chamberlin and others who would account for the occurrence of implements in the lower strata of sand and gravel through the agency of dry-weather cracks in the surface, the overturning of trees, the decay of tap roots, and the activity of burrowing animals; for none of these agencies would select the argillite, and leave the flint and the jasper upon the surface. Therefore it would seem that there can be little doubt that these argillite fragments were scattered by the agency of man at the time that the deposition of the Trenton gravels was still in progress.

2. A second paper was by Professor E. W. Claypole, detailing the particulars

EDITORIAL.

concerning the discovery of human relics from the drift at New London, Huron county, Ohio. These consisted of what would be called Neolithic axes, found by an intelligent workman in the process of well-digging in the blue till twenty feet below the surface. The circumstantial evidence sustaining the testimony of the workman is of the most convincing character. The passage from the yellow till into the blue till and the occurrence of occasional strata of gravel are characteristic of the glacial deposits of Northern Ohio. The implement had been subjected to oxydizing agencies characteristic of the deeply covered strata of that immediate vicinity. It is impossible briefly to detail this evidence. We must therefore wait for its full publication by Professor Claypole.

In a word, the geological situation at New London, Ohio, is this: The watershed between the Great Lakes and the Ohio is but a few miles to the south, and drains to the north through the main valley of Vermillion river. The land about New London is level for several miles, and is about two hundred feet below the summit of the watershed. There is no opportunity for any disturbances to have occurred subsequent to the glacial period; but in the retreat of the ice from the watershed a temporary glacial lake doubtless occupied the upper part of the valley of Vermillion river, emptying its waters into a tributary of the Mohican, and thence into the Muskingum and the Ohio. But this lake evidently did not exist for a great length of time.

Heretofore numerous flying reports of the discovery of implements in the glacial till have been made, but this is the first instance where the evidence has seemed in itself altogether convincing and satisfactory.

G. FREDERICK WRIGHT.

(Reprinted from *The American Naturalist*, October 1st, 1896.)

By the munificence of Morris K. Jesup, President of the American Museum of Natural History, of New York, three expeditions will be dispatched to the countries bordering the north Pacific ocean to investigate the native people and their surroundings, from the mouth of the Columbia in Oregon, to the Amoor river in Siberia. They will be in the interest of the American Museum of Natural History, under the direction of Professor F. W. Putnam, and will probably require six years to complete the work. The first of the three parties will leave for Oregon, Washington and British Columbia about the first of June, in charge of Dr. Franz Boas, assisted by our Associate Editor, Mr. Harlan I. Smith, who will be chief of the archaeological department of that expedition. The readers of *The Antiquarian* will share this good fortune in having Mr. Smith's reports of the progress and results of his investigations. The parties to explore Alaska and Siberia will leave New York some time later.

The chief object of these expeditions will be to trace the origin, early history and lines of migration of the American race, and discover, if possible, its relations to the people of Asia. They will go over the ground more thoroughly and systematically than has ever before been done; and, on the Asiatic side, study the people there before the completion of the Siberian railroad and other accultural influences, have materially altered the primitive conditions now existing there. Though on the two sides of the north Pacific ocean there are fifty or more different dialects spoken, and great changes have occurred during the past centuries in the seats of population, and in the shifting tribes differently affected by diverse climates, foods and environments, it is claimed that affinities in the peo-

ples of the opposite coasts are yet found in similarities of mythologies, linguistics and customs and in the use of identical utensils and implements; that tend to establish racial unity and gradual transition of tribal types. These problems have long been discussed by scientists without satisfactory results. Mr. Jesup has now furnished the means to definitely solve them, if their solution is yet in the range of possibilities.

Readers of *The Antiquarian* will be pleased to learn that General Gates P. Thurston, of Nashville, Tenn., is contemplating a second edition of his great book on *The Antiquities of Tennessee*, one of the recognized classics of American archaeology. At moments spared from demands of business, he is preparing additional chapters, and having new illustrations made, to bring the work up to latest observations and discoveries. We are not advised when the new edition will be issued, but presume it will not appear before the close of the Tennessee Centennial exposition late next fall.

Rink, the great student of the Greenland Eskimo, expressed the value of Folk-Lore as follows:

"The time will certainly come when any relics of spiritual life brought down to us from pre-historic mankind, which may still be found in the folk-lore of the more isolated and primitive nations, will be valued as highly as material remains."

The *Antiquarian*, being devoted, among other phases of Anthropology, to primitive matters, may well put on record from time to time such items of primitive thought as may be secured, as well as items relating purely to primitive industries and manufactures.

The unity of the human family, biologically considered, is one of the most firmly established facts in science. That all people are the product of one origin is believed to be true; though there are obstacles in the way of the perfect infallibility of this dogma, as some think, that the most ingenuous schemes of evolution fail to satisfactorily overcome. The dispersion of people over the world, from a single pair, is susceptible of ready explanation by migrations, voluntary, compulsory or accidental, during enormously extended periods of time, without dependence on hypothetical geologic changes. But the stubborn fact remains that each grand division of the earth was somehow peopled by a type of the human race of marked distinct peculiarities, differing so widely from each other that the extraneous agencies of sexual, or natural, selection, climatic influences or environments, operating through ages, seem inadequate to fully reconcile such discrepancies with the doctrine of primal unity.

The aspect of this question that concerns American Archaeologists is—not how or where the first pair of human beings were created, or evolved from animals of a lower order—but how did man get to America? This problem has occasioned much speculation, amounting in the main to little more than conjecture, because little if any reliable data has yet been discovered to serve as a basis for sound inductive reasoning. The American Indian is generally believed to be an exotic. His exodus from the Aryan cradle or plateaus of Thibet must have been as complete as that of the Israelites from Egypt, for none of his kinsmen, remote or proximate, have since been found there. In his eastward migration, following the current of the

Kuro Siwo by successive stages, or successive generations, along the genial borders of Jesso and Saghalien and the salubrious shores of Kamscatka and ambrosial vales of Alaska, he finally reached the Columbia river, bringing with him his entire stock of humming birds and rattle snakes—for none of those pets were left in Asia. Or, it may be that he was tempest driven from the Japanese gulf stream and ultimately cast upon the California coast. One supposition is as plausible as the other and neither is supported by any known fact. To geological evidences and the remains of his arts we must depend for the true explanation of the Indian's presence here, if it is ever satisfactorily explained. About the close of the Pliocene the great ice sheets crept down from the north and covered the upper half of North America and Europe down to the Mediterranean; but whether simultaneously on the two continents is not pertinent to the present discussion. There seems to be conclusive evidence that primitive man inhabited Europe at or before this time. In this country a few eminent men claim that similar evidence has been found here, in stones rudely modified apparently by human agency, in formations they believe to antedate or be coeval with the ice period. These few lithic witnesses, however, are so few in numbers and uncertain in character, and their actual geological positions when discovered so equivocal as to nullify the claims based upon them; or at best leave them in doubt. Apart from this class of objects—so-called "palaeoliths"—still in controversy, the stone art remains in America are all of the advanced or Neolithic stage of culture. Obviously so for the reason that if this continent was first peopled by a foreign stock, it matter not how low in the scale of intelligence or obtruse in mechanical skill they may have been on leaving their native habitat in Asia or Eu-

rope, the exigencies of their migration—though supposing the intervening oceans at the time were dry land—in traversing mountains and crossing rivers, hunting for subsistence, conflicts with fierce animals, and surmounting innumerable natural obstacles; or if they came by sea, the construction and navigation of boats and intensified battling for subsistence and life on water, would have developed technic aptness and rendered them adepts in working stone and other available materials.

It has been but a few years ago when the world of science was startled by the discovery in France of rudely chipped implements of stone in unmodified drift deposits; proving conclusively, as is generally admitted, the existence there of preglacial man. The claims made of discovery in various localities in this country of elemental stone implements, in every particular identical with the "true palaeoliths" of Europe, in similar drift formations, have been strenuously combatted, chiefly upon the a priori assumption that the primitive Americans were of foreign origin and could not have reached this continent before or during the period of its general glaciation, consequently, American "palaeoliths" are misnomers, and all should be known indiscriminately—and perhaps justly—as the "rejects," "wasters" and "shop refuse" of the later stone-age Indians. American prehistoric Archaeology, as a science, is yet in its infancy. Exhaustive research, patient, careful labor; arranging, sifting and comparing accunulated facts and their intelligent interpretation, are yet requisite before definite conclusions can be announced. The antiquity of the American race is an unknown quantity; and, though highly improbable, it is possible that irrefragable evidences of man's abode here before the glacial time may yet be found, proving him an autochthon—a polygenetic product of the Occident.

J. F. S.

THE PLUMMET PUZZLE.

The article on Hematites in the January Antiquarian brings up the puzzle of the so-called plummetts.

We may be unwise to touch this subject, but it is interesting; and while the use of these articles is unknown, the question will be agitated until some plausible theory is advanced upon which we can agree. Here are the uses for these curious little articles, as suggested from various sources. According to our authorities they are:

- 1.—Plummetts (used as such).
- 2.—Pendants (used as ornaments).
- 3.—Sinkers (used in fishing).
- 4.—Weights (used in weaving).
- 5.—Slungshots (used as a weapon).
- 6.—Charm stones (carried by medicine man).
- 7.—Ceremonial stones.
- 8.—Bolas (for capturing game).
- 9.—Missiles.

1. The name plummet was applied to them from the first on account of their shape and size, but the idea of their use as plummetts has long been laid aside as impossible. (See 3rd.)

2. Some of them might be used as suspended ornaments or pendants, but we find that all or nearly all the ornaments thus used are flat. A cylindrical or square pendant would not be a comfortable article to wear. (See 3rd.)

3. The writer of the article above referred to has answered the net sinker theory. He says: "No archaeologist can justly classify such a work of art as a mere net sinker. An ordinary notched pebble would serve better and could be more readily replaced if lost." More than this, the crease is not deep enough to tie the plummet securely to the net. The crease is shallow in nearly all specimens and would hold only the smallest threads. This latter reason applies in (1)

and (2). To be sure, the perforated ones could be firmly attached, but the perforated form is rare. We could use a watch as a weight for a throw line in fishing, but we prefer an ordinary stone or bit of iron for obvious reasons. A plummet of hematite was worth as much to its owner in time and labor as a watch is worth to us. More than all this, we find the net sinkers which they did use, and they are just what we would expect—small stones or pebbles notched for attaching the line.

4. As loom-weights they would perhaps be useful, but again that shallow crease interferes, and occasionally we find the crease nearly half way down the plummet. The plummetts are found where there are no other traces of weaving. In fact, we have every reason to believe that they were used by a people who did not weave. McAdams claimed that there were none found in the older mounds of Illinois. The builders of the later ones certainly did not weave. The answer to three applies here also.

5. One man, at least, has claimed that they were used as slung-shots, made as the slung-shot of today is made—by covering with leather and attaching a handle of the same. An ordinary stone, more especially a round one, would serve the purpose without the labor. Same objection as in No. 3.

6. The January article on Hematites twice mentions the charm stone theory of Dr. Yates. If carried in a bag, why were they creased or perforated? Why should we consider them as charm stones if never found with the rest of a medicine man's outfit? In Ohio a large number were found buried in one spot. This does not prove their charm, because axes, pipes and flint blades have been found cached in a similar manner. The song quoted, although it speaks of a charm stone, does not

indicate whether the article meant is the plummet or the eye-stone from a cray fish.

7. We have fallen into the bad habit of calling every relic whose use is unknown a ceremonial stone. We do not wish to open up the subject of ceremonial stones, but firmly believe that a comparison of plummetts with ceremonial articles that are accepted as such by good authorities, will remove them from that list most effectively. They are not often found with the real ceremonial stones. I suspect that the old Indians interviewed called them charm stones for the same reason that we call them ceremonials. I do not guess this, but judge it to be true from the experience of myself and others in gathering information from Indians.

8. The bolas theory is subject to the same objection as in number 3. It is true that they could be used to advantage in capturing birds and other small game. By this theory they were covered with leather and attached to cords. They were thrown from the hand and captured the game by wrapping around it. Such an arrangement is still used by South American Indians, by African tribes and by the Esquimaux. The stones would need no such polish or elaborate finish and creasing. Had they been used for this purpose we would find them in two or threes.

9. We now come to the missile theory, which seems to be as plausible as any of the nine mentioned. According to (9), the plummet was thrown either at game, at an enemy, or at a mark in some game. As the creases are unusually shallow, it is more probable that some light substance was bound to the plummet than that they were supported or suspended in any way. What was the "light substance?" Why not feathers? Just try a plummet with two or more small feathers bound to the small end by a thread. You will be surprised to find

how well its flight is guided by them. How about the perforations? Put the ends of the feathers through the hole from opposite sides and then tie. It will work. But the hole may have been added simply to avoid loss. When not in use, a string could be passed through and tied to the clothing or some other article. Even though the crease be half way down the plummet it can be used in the same manner, unless you tie your feathers in different directions. How were they thrown? Probably by hand. It matters not how you hold it, when once thrown from the hand the feathers cause it to travel straight and true. For greater distances, the throwing stick or sling may have been used. The fact that they were almost invariably of heavy material points to the missile theory. I offer No. 9, and ask for it a place in the list. If rejected, it has company. If accepted it is another riddle solved. (William McAdams, in his article contained in the report of the Illinois Board of World's Fair Commissioners, states of these plummetts: "They are common in Illinois." "The majority of these objects are of hematite.")

F. M. MUHLIG.

(In the American Naturalist of November, 1872, a paper appeared written by Judge John G. Henderson, now of Chicago, on the subject of that unique class of Indian relics known as "plummets," in which he thoroughly dicusses their hypothetical uses:

- 1.—As slung-shots.
- 2.—As sinkers for fishing tackle.
- 3.—In playing some game.
- 4.—As sacred implements in religious ceremonies.
- 5.—As personal ornaments.
- 6.—As plummetts and levels.

And concluded, from the data then at hand, that the last supposed use—as plummets for leveling—was the purpose for which they were made and utilized.

In the annual report of the Smithsonian Institution for the year 1886, part 1, Dr. Lorenzo G. Gates, of Santa Barbara, California, in an able treatise, illustrated with figures of thirty-four different forms of those curious objects, critically reviews Judge Henderson's conclusions; and, after citing many additional facts and the opinions of several writers, states it to be his belief that they were held by their ancient possessors in veneration as charms or talismans, possessing supernatural properties or powers.

Mr. Muhlig's theory is ingenious, but lacks support of convincing evidence. The "plummets," as a rule, retain the integrity of their original symmetry and fine polish, few, if any, presenting battered or broken ends; or abraded or roughened surfaces that inevitably would result from frequent contact with the ground or harder substances when thrown. Then too, there is no warrant for the belief that Indians would bestow so much labor and skill in fashioning, creasing, perforating and polishing these queer objects from such refractory minerals as hematite, porphyry, etc., simply for use as missiles, when common beach pebbles would better serve the purpose and could so easily be replaced when lost.)

J. F. S.

A stone ax measuring 14 inches in length and 6 1-2 inches at the widest part and weighing 17 1-2 pounds, was recently dug out of a mound near Frederick, on the Illinois river. It is of hornblend, a hard, volcanic rock. It is said to be the largest and finest specimen ever found.

BOOK REVIEWS.

The Thirteenth Annual Report of the Bureau of Ethnology, Washington, 1891-1892.

This annual report sustains the high scientific character of the Bureau's labors, and is additional testimony of its value and of the far-reaching wisdom that authorized its institution.

Though its publication has been unavoidably delayed four years, after its final preparation and submission there has been no diminution of interest on that account in the matter it presents to the public.

The volume opens in an introduction by Major J. W. Powell, the Director, with a comprehensive review of the purposes and organization of this subordinate department of the Smithsonian Institution; detailing its original plan of operations, the subsequent growth and expansion of its range of investigations since its inception in 1879; with modifications of the first crude plans suggested by progress of the work; and ending with the usual summary of accomplished tasks by the corps of efficient assistants during the preceding year. The aggregate results for that year are very important and replete with interesting information. They were drawn from every available source of knowledge concerning the existing tribes of Indians; as also of their prehistoric ancestors, studied by their remains and the relics of their arts and industries. To rescue from the unwritten past and unlettered present of the American race all that can be learned of it, and record in durable form that accession to the common stock of knowledge, is the mission of the Bureau of Ethnology. Each annual report submits a faithful account of what it has done and is engaged in doing.

As in the preceding annual reports, the summary of the Director is in this one supplemented by very able special reports from his collaborators, as follows:

The first monograph on the Prehistoric Textile Art of the Eastern United States, by Professor William H. Holmes is—as all his papers are—elegantly and clearly written, evincing industrious and far-reaching research, and well nigh exhaustive of the subject.

In the next treatise, on Stone Art, Mr. Gerard Fowke, who is an adept in Archaeology as well as in his chosen science, Geology, presents a fine descriptive compilation of the Stone Art remains collected by the Bureau of Ethnology and of Stone Art lore of America, well systematized with many notes and references and profusely illustrated. He has surmounted many of the difficulties of a complete classification of Stone Art objects—which, by the way, is of no great utility to science—and has thrown much needed light upon the uses and modes of manufacture of many stone fabrications heretofore quite enigmatical. The paper is the outcome of acute observation, much thought and a wide range of study. The reports of Mr. Cosmos Mindeleff on Aboriginal Remains in Verde Valley, Arizona, and the Casa Grand Ruin, that follow, are among the most thorough and finished of all that gentleman's extensive field observations. He reviews the discoveries, observations, opinions, measurements and descriptions of all who have gone over the ground before him, corrects their mistakes and errors; and brings to bear for the perfection of his own work all possible aids from all accessible sources. His papers, numerous and illustrated by the photo-engraving process, take rank among the most valuable original contributions to our prehistoric archaeology.

The memoir that follows Mr. Mindeleff's is on Omaha Dwellings, Furniture and Implements, by the late Rev. James Owen Dorsey, who died in Washington city, February 5, 1895. He was selected as an assistant by Major Powell on first organizing the Bureau, and devoted the balance of his life to its service. His early missionary duties among the Indians emphasized his natural tastes and aptitude for the deeper elements of Anthropology, and he gained the distinction of ranking as one of the "ablest and most promising workers in the domain of American linguistics and Sociology." This paper on the domestic life of the Omahas is one of equal worth with several others he has contributed to broaden our knowledge of the traits, habits and nature of our living Indians.

The last treatise in the present volume is by Mr. Frank H. Cushing, on Outlines of Zuni Creation Myths. Of this production Major Powell says: "Mr Cushing's discoveries, as set forth in this essay, confirm and substantiate the opinion held by the Director that all primitive so-called dance ceremonials are essentially dramatic, and they go so far as to indicate also that all primitive ceremonials, of whatever nature, are essentially dramatic, thus making his contribution of general as well as of special significance."

We have only mentioned these several papers in general terms to invite our readers to give them careful perusals. To give them separately the notice and consideration their high merit entitles them to, would exceed the limits of these pages.

We regard the Ethnological Bureau's annual reports as among the most valuable of our government publications. They are not only invaluable to votaries of the Anthropological Sciences, but eminently entertaining and enlightening to general readers of all classes; and should be found in the home as well as in all public libraries.

In a former number of this journal we acknowledged the receipt of *The Swastika*, a reprint, part of the report of the United States National Museum for the year 1894, written by Hon. Thomas Wilson, L.L. D., Curator of the department of prehistoric antiquities of the Smithsonian Institution. The great labor and care expended in collecting from every available and accessible source the amazing amount of matter for this treatise; its skillful and orderly arrangement; its profuse illustrations and clear exposition of facts; and adroit deductions of its learned author, entitles the work to high rank among the Smithsonian contributions to knowledge. The subject of which it treats—*The Swastika*—is simply a modified form of the cross; a Greek cross with arms of equal length, having the end of each arm bent in the same direction at a right angle. This figure is stated to be “the most ancient form of the cross, and the earliest known symbol.” This exalted claim rests probably as much on conjecture as upon actual proof. Its high antiquity cannot be denied, for its elemental proportions are among the objective conceptions most readily grasped by the pristine intellect. The earliest and simplest form of the cross must have been represented by two straight marks or rods, resting upon each other at right angles; and the first figurative expression of dawning human sentiment, it is reasonable to believe, would be symbolized by crude representations of the sun. The name *Swastika* is from the Sanskrit, signifying good fortune, hence this artless device was anciently a symbol of good fortune or prestige of success, somewhat as the figure of the horseshoe is held by the superstitious in modern times to be a lucky or propitious omen. The least intricate of all diagrams and easiest formed, are the cross, the circle and the square; which, because

of their uncomplicated simplicity, are the first suggested as ideographs to savages and children the world over. The cross, in its original and several modified forms, was in use ornamentally or as symbols by the aborigines in America when first discovered by the Spanish worshipers of the Christian cross. The brutal invaders, ignorant and fanatical, incapable of discrimination between the stupid fetichism of the savage and the lofty inspiration of their own emblem, accorded to both a unity of sentiment and expression. Thus, to explain the startling discovery of the cross among a savage people in a new and distant world, the hypothesis of pre-Columbian propagation of Christianity in America by Saint Thomas was offered by the priests and accepted as true by many Catholics for a century or more. Not only in America, but in all parts of the world the cross in some form was employed symbolically by people of every degree of culture and of no culture at all, from the earliest times down—to the signature of the illiterate—at the present day. It was an emblem for ages before the supremacy of Rome in Palestine, but was not invested with religious significance or sacredness by any people until, degraded to the office of a gibbet, it served for the execution of the founder of Christianity.

Dr. Wilson ably and industriously marshals every instance of parallelism and coincidental invention here of the *Swastika* as proof of its migration from the old to the new world; and, it must be admitted, makes out a strong case, when the total absence of facts is considered. Granting the correctness of his theory of prehistoric inter-communication between the two hemispheres to account for the introduction here of the *Swastika*, spindle whorls, etc.,

we would logically expect to find as further and more conclusive evidence of such intercourse, the introduction, by way of exchange, of tobacco and corn into the Orient. But those products were unknown there as late as the time of Sir Walter Ralieggh. In giving us what the author modestly styles "a suggestive" summary of all that is known of the Swastika as a symbol or ornament, he has produced a work of superior merit and has well filled a long-standing gap in this branch of learning.

J. F. S.

The Thirtieth, 1895-96, Report of the Peabody Museum of Harvard University, to the President of the University, has been issued by Professor Frederick W. Putnam, Curator of the Museum. In spite of the financial depression, the work of the museum has progressed. The need for men properly trained for educational museum work is emphasized.

The collections received from the several expeditions of the museum to Copan, Honduras, have been catalogued and comprise 1400 entries.

The Hemenway collection, from the Pueblos of the Southwest, has been installed in the museum and is now on public exhibition.

The field work of the museum has not been as extensive as in some former years, but work of value has been in progress. Mr. Volk has continued his investigations in the vicinity of Trenton, N. J. Mr. Willoughby made researches at the pre-historic sites and quarries of Mount Kineo, Maine. And Mr. Gordon made a general archaeological trip in Guatemala and Honduras.

The Museum has published, as No. 1 of a series of quarto memoirs, a preliminary report on the work at Copan, which was

prosecuted by Mr. Saville, Mr. Owens and Mr. Gordon. A map of the ruins and eight plates accompany the report.

The instruction given in the Museum has continued, there being eight students at work, four of whom are engaged in special research. In this work Mr. Frank Russell assists the curator, taking charge of the introductory work formerly conducted by Dr. George A. Dorsey, who was called to the Field Columbian Museum at Chicago.

The ethnological collection made by Dr. Alexander Agassiz during his recent trip to Australia, New Guinea and Samoa, have been given to the Peabody Museum of Archaeology and Ethnology. This collection includes models of native boats, as well as many implements, weapons, etc.

"The Aztecs of Ancient Mexico," is the subject of a course of six lectures offered by Professor Frederick Starr, of the University of Chicago. A syllabus of these lectures is issued by the University Press and may be used as an outline for studying that people. References are given to the authorities quoted so that the student has in the syllabus a guide to the literature which he would first study. There is also a series of exercises and questions following each subject to facilitate mastering it.

Professor Starr treats the language, mythology, picture writing, ancient manuscripts or codices, daily life, industrial arts, dress, architecture, song, music, the dance, society, government, land tenure, religion and mortuary customs.

H. I. S.

Annual Archaeological Report for 1896-97:
Being Part of the Appendix to the Report of the Minister of Education of the Province of Ontario, Canada. Toronto, 1897.

This report testifies to the enlightened progressive spirit of the Ontario Scientists and Legislators, and adds materially to our knowledge of American prehistoric archaeology. It is an octavo pamphlet of 118 pages, comprising, first, an enumeration of all accessions to the Provincial Museum during the last year; then fourteen pages of commentaries upon mound-building theories and Indian history; then several highly interesting reports of mound explorations and accounts of effigy and sepulchral mounds, embanked hollows, pits and caches, ossuaries and graves; followed by notes on flints and pipes, axes and gorgets, all minutely described and well illustrated with many photo-engravings and electrotyped cuts. In an appendix, the views of Professor Putnam and others are given on Serpent Worship; and it concludes with an obituary notice and brief biography of Hon. Horatio Hale, the distinguished Anthropologist, who died at Clinton, Ontario, December 28, 1896, almost eighty years of age.

It would indeed be a long stride forward if every state in our Union would emulate the example of Ontario in collecting and publishing each year the annual reports and results of researches within their respective limits, in the unwritten history of our earliest inhabitants; thereby enlarging and enriching popular education, stimulating further investigations and justly assuming the incidental financial burdens that hamper the efforts of the non-salaried enthusiasts.

CORRESPONDENCE.

A PEQUOT INDIAN MYTH COLLECTED BY
DR. J. FRED. ROWELL.

There are, according to the eleventh census, 228 self-supporting Indians in Connecticut. They are mixed blood descendants of several of the tribes of the great Algonquin family with the whites. Mainly being fishermen and laborers, some of them are indistinguishable in appearance from other people of like employments. From one of these, Mrs. Fidelia Fielding, a woman of some seventy years of age, of Pequot descent, * this tale has been secured. It is given as nearly as possible verbatim. She heard it from her great grandmother when a young girl.

H I. S.

THE MYTH.

Once there was an old man who lived on an island all by himself. He was a very wicked old man and was in league with Jeely, the bad god.

Now one day a beautiful young woman went down to the water to pick up oysters. The old man saw her and carried her off to his wigwam. He made her work very hard. One day she thought of a plan to get away from this old man. It was a thought sent to her from Monedo, or God. One day while the old man was away she made a lot of imitation men out of buckskin and leaves. Putting them in the wigwam and around it on the outside, she took a canoe and started for the land. When she was getting ready the

*This tale represents analogies to the myth of the "Magic Flight," found among several of the tribes of the west.

The idea of throwing back objects to delay a pursuer is also found in the Tale of Two Girls—Rink—"Tales and Traditions of the Eskimo." A Labrador version of this Eskimo tale was published in the Journal of American Folk-Lore, September, 1894, page 210.

old man returned. He went into the lodge and saw a person, as he thought. But it was only an imitation one made by the girl. The man went up to it and spoke. Now Monedo put life into this make-believe man and made him speak. He said: "Your squaw is on the other side of the wigwam." The old man went over there and the other imitation man also spoke and told him to go outside. As this bad man went out he saw what he thought were many people. They were nothing but those made by the girl before she went away. Now as the man was looking out on the water he saw his beautiful young squaw leaving him. He jumped into his canoe and paddled with all his might. He was a very strong man and got very near to the girl. As she started away she put a lot of pestles and other things into the canoe. When she was afraid the man would overtake her she threw a pestle into the water so as to make the canoe lighter. At once a large hill of pestles sprang up. The old man had to carry his canoe over this hill. It took him quite a while and the girl got ahead of him again. But he was strong and soon caught up to her once more. She again threw something over, and as before a hill sprang up.

She did this until she had thrown everything over into the water. The man thought surely he had her, now that she had thrown out everything. As he got up near her again she pulled a hair out of her head and straightened it on her knee. This made it very hard and strong. As the old fellow reached out to seize her, she hit him with this hair and knocked him into the water. He was made to die by Monedo because he was very bad. The young woman returned to her people and told her story.

That is how it came to be handed down so that we now have it.

A PECULIAR STONE MOUND.

In the summer of 1896 I went on a botanical expedition along the sandstone ridge that follows Green river in its course through southern Kentucky. Under the over-hanging sand rocks, sheltered from the sun's rays, are spaces of vast extent where the aborigines evidently had their homes. This is shown by the numerous fragments of flint and many relics that have been found here. Also by the mounds in the neighborhood—many of which have been opened—and by the mortar holes in the detached masses of sand-rock. I counted more than a dozen of these mortar holes at different places along the ridge.

In the northwestern part of Warren county an oblong knob is known by the name of "Indian Fort." It overlooks three counties. On the top of this there are eight mounds. They are but slight elevations now, still are quite distinct. They are arranged about a center, two facing to each point of the compass, leaving an avenue between each mound.

Under the cliff of this hill there are two mortar stones, and not far from these a bed of mussel shells.

In a corn field not far from the shell heaps, is a group of limestone slabs, set endwise at regular distances, about a foot apart and more than half buried under the earth.

The stones were evidently carried here, a distance of a mile or more, as it is this distance to a limestone ledge. They were half covered by the roots of a large mulberry tree that had grown over them in the center of the heap. Could these have been arranged for some ceremony?

The owner of the land reluctantly consented to dig beneath the roots, between two of these slabs. The country people are so superstitious about opening these mounds, telling me of dire misfortunes that would come to one if these were disturbed. The man had implicit faith in a story that a "will-o'-the-wisp" appeared to a man for many nights after he had uncovered a mound. It "haunted" him, he said, and only disappeared when he returned and buried the rifled contents.

I found only a number of broken bits of bone beneath the roots of the tree, but as the owner was so opposed to such search, I had him to desist from further work. One of the bones was evidently a small skull, but the man clumsily broke it in digging, so I have only parts of it.

SADIE F. PRICE

Note.—This series of stones apparently represents a cross, and is therefore of great interest.

C. L.

Mr. F. H. Williams, of Bristol, Conn., writes that he has found similar tools, such as those described in Dr. Snyder's "Indian Plain" article. Of one of them he says: "The face is nearly flat like a flaked knife, the other worked all around, thick in the center convex, like a turtle back. The base is like an ordinary notched arrow point. One side of the blade is nearly straight and poorly worked, but the other sweeps around the fourth of a symmetrical oval. The chipping is all done from the convex side down to the flat face at a sharp bevel. When the flat face is laid upon a green sprout of soft wood and pushed forward against the curve, it will cut the bark and soft wood as does a draw shave, for which purpose I think it was made."

Mr. John J. Janney furnishes an interesting diary relative to the capture of Abel Janney in 1782. His camp, occupied by himself and two other companions, was surprised at daybreak on the 12th of March, near the mouth of the Great Kanawa river. One man escaped and the other was killed and scalped. Janney's arms were securely tied and a pack placed upon his back. "We traveled exceedingly fast all that day, and two days after we came to an Indian camp where some Indians were hunting. When they came near the camp they made a halt and painted me red, and the white man that killed my companion painted himself black and then gave the scalp Hallo, so we went on until we passed the camp a small distance. The Indians had not as yet returned from hunting. When my Indians saw them they immediately cut off three large stakes and shaved off the bark and painted two of them red and the other black, and I was tied very fast. They immediately came to our camp, and my Indians (as I called them) were all set down in a row, except one, who came and sat by me. The strange Indians shook hands with them immediately and sat themselves down and smoked and talked a long time. At last they began to make hoops to stretch my companion's scalp upon, as they had not yet done it. When they had done that, they made another and stuck it up before the fire. The little Indian who sat by me pointed at it and said: 'No good for you,' which gave me all the reason imaginable to expect to be massacred. However, some time in the night the squaws brought a quantity of roasted bear's meat and they gave me some to eat and made me to understand that I should see them at their own town, so I ate some of their meat and they tied me very fast, and we laid down to sleep. When we came to their town, there was nobody there but a few old squaws; the rest of the Indians were all at their sugar camps making su-

gar, which was well for me, for had they been at home I should, in all probability, have been exceedingly ill treated, as it is a general practice with that nation to whip prisoners most barbarously at their first coming into town, or at least until they can get into the Council House. It was on the 20th of March when we got to the town, and the old Indian who kept me took me home from the Council House to his own wigwam. I shall fail of words sufficient to convey a full idea of what they must have suffered who were permitted to fall as victims to their savage barbarity. The first that was put to death was one James Whart, a Quaker, who appeared to be a sober, solid man. They had kept him about two weeks before they put him to death and he had not the least expectation of it until they took him and painted him black, which they did early in the morning and tied him securely. They then led him off to a town three miles distant, and there they gathered to have a frolic with this poor object of pity. They led him up to a large stake near a large fire prepared for the purpose, and then they had scalped him and cut his nose off so that it hung below his under lip and then they cut off his ears and took shovels and threw hot embers out of the fire upon his head whilst others were employed in burning him with fire brands; in short, they lacked nothing that they could invent to augment his pain." Janney says that upon the 2nd of August he prepared himself for his escape. At this time the men were in Kentucky at war, and there was no gun in the house in which he lived. There is nothing of ethnological interest in his adventures following his escape until we find him in the hands of another tribe, which he calls the Tawwas. It seems that he spoke the Shawnee tongue, and these Indians coming upon him on the trail some time after his escape, took him prisoner, but treated him humanely and carried him to their village at Sandusky, in northern Ohio. "So he took a pair of scissors, which they always take with them to war, and began to trim my hair, which they did according to the

Indian custom. Then they painted me and fixed me as much like themselves as they possibly could and gave me my own gun, and we marched up to the town with two scalps on a stick and came into it and sat down near a trader's house, when the Indians of the town (as their custom is) brought us victuals, such as they had, which were very acceptable to us, having eaten nothing for almost two days.

"Unexpectedly the chief sat down by an old squaw, whom he talked with for a long time, and after he had made a stop in speaking to her, she looked at me as I was standing, and clapped her hand down on the ground where she sat, showing me that I must sit down by her, and began to tell me that it was her son who had taken me; that she had one more out at war yet, and now I was her son also and so gave me some victuals, water melons, and apples and pitied me very much, seeing that I was so exceedingly poor. She said the Shawnees were not good for using prisoners, so I remained there for two weeks and was kindly treated by them, having nothing to do but cut a little wood for the fire and shoot blackbirds that came up to eat up the corn, and according to their aforesaid promise, they carried me to Detroit, where we arrived on the 3rd of September, 1782." C. L.

Mr. D. B. Austin writes to The Antiquarian about his collection and sends a photograph, which we herewith reproduce. His exhibition will stand as a fair representative of the average cabinet in the hands of a collector. I have seldom seen a collection of this kind shown to better advantage. It is neatly and gracefully grouped, so arranged that all its important features are plainly brought out.

Most of the specimens came from Suffolk county, Long Island, some of them being found along the shore of the Sound. The upper card of flint implements are from Long Island, as are the grooved hatchets, just above the string of beads. His hematite objects are arranged below the beads, and consist of six axes and a number of plumbs and celts. These come from the Missouri and the Ohio valley. At either end of the second row,



below the hematites, is a card consisting of objects from graves on the Pacific coast. The card at the left is the more interesting of the two, as it exhibits a copper bracelet and ring, long shell and bead pendants, etc.

Near the bottom of the picture may be seen a stone mortar and perforated implement from North Carolina; to the left of

this, a mortar and pestle from North Carolina; just to the left a mortar and pestle from Oregon. The roller or elongated pestle, to the right of the center, came from Long Island, and the pipe just above it from Georgia. Taken as whole, the mounting and displaying of this collection could be followed by other collectors with profit.

RECENT DISCOVERIES.

I would advise students to pay particular attention to low, bottom lands along streams this month. The recent extensive floods in nearly every section of the country have washed village and burial sites, and exposed many objects. This is especially true in the Mississippi Valley.

About the middle of March I spent some days searching along the Scioto river banks. In some places currents had cut out gullies or swept away surface loam. My finds consisted of stone, bone and clay relics, several hearths and some graves. Near Waverly, Ohio, a large village site was almost laid bare and during a day's search I picked up several hundred specimens.

It has been years since a more favorable opportunity was presented to students for field work.

I went along the Scioto river in the interests of the State Archaeological Museum, and found a number of stone hearths just at the edge of the water. Allowing for a fall of six feet, which would bring the river to its natural stage, and for the slope of the bank, these hearths were about thirty feet from the water's edge. The river is deep at this point and navigable for canoes (especially for early times) clear to the Ohio. None of the hearths were more than six or seven feet in diameter, and seemed to have been made by hunting or fishing parties, who had landed for no great length of time at this site. I found pottery fragments, flint arrow heads and numerous chips and spawls all along the bank of the river.

C. L.

Readers of *The Antiquarian* are doubtless aware of the remarkable discoveries on the site of Babylon, made by the University of Pennsylvania's expedition. Rev. John R. Peters, who first had charge of the expedition, lectured recently at Baltimore, and said that the date of 6000 B. C. for the founding of Nippur is a decidedly conservative one. Much light has been thrown upon Bible history by these discoveries and, assuming that Ussher's chronology is not correct, the historical part of the Old Testament must be set back more

than two thousand years. If recent newspaper statements are to be believed, and one can scarcely doubt them, the antiquity of the first city must be placed at 9000 B. C. Assuming that man could record his thoughts at such an early date, what must be the antiquity of man, when we consider that the neolithic precedes the historic and the paleolithic precedes even that? C. L.

MUMMIES IN ARIZONA.

Mr. O'Toole, a prospector, arrived in the city last night with a number of mummies and historic relics which he unearthed in the Cave Dwellers' ruins on the Verde. Mr. O'Toole made a complete circuit of the Verde river, from Cave Creek, around the head of them, and spent considerable time excavating among the ruins of the Cave Dwellers. His search was rewarded by finding a number of mummies of children in a good state of preservation, arrow-heads, cloths of various kinds, needles made of bone, corn, both on the cob and loose.

This morning Mr. O'Toole called on Dr. Tuttle, who unwrapped the mummies and examined them. There is absolutely no question of their genuineness, as the skulls, teeth and bones are in a good state of preservation, while one of them has a fair growth of hair on the skull.—*Phoenix Herald.*

Some months ago a peculiar find was made at Fairfield, Iowa. While excavating on the site of new water works, a workman found a short hollow log coated with gum or wax. Opening this he found within a roll of birch or other bark upon which were hieroglyphics of manifestly Aztec or Maya origin. The find was sent intact to Mr. W. K. Moorehead, Curator of the State Museum, this city. Mr. Moorehead has forwarded it to the Smithsonian Institution for examination.

Upon the receipt of the opinion of Smithsonian experts he will describe the find in the *Antiquarian*.

THE ANTIQUARIAN.

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THE HOPEWELL GROUP.

WARREN KING MOOREHEAD.

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Ross county (Ohio) contains some five great mound groups, each of which is noted for representing a high culture-state. All of the lower Scioto valley was occupied by a mound-building tribe ranking higher in intelligence and numerically stronger than that of any other section of the whole Ohio river region. There are many fortifications, enclosures and mound groups in this famous valley and all of them are truly imposing; but the Ross county five referred to above, rank first.* Among these, towering as a colossus is the Hopewell group. No mound cluster in the whole United States has yielded a collection—a fund of testimony—comparable with it, and even Squier and Davis' find of 196 pipes and all their remarkable collections in the Blackmore Museum must bow to that exhibit in the Field Columbian Museum labelled, "North Fork of Paint Creek. Farm of Mr. M. C. Hopewell, 7 miles n. w. of Chillicothe, Ohio."

The two enclosures and their mounds have been referred to in most of our works on American Archaeology, but from the time of Squier and Davis' exploration down to 1891, no one paid any attention to this great group and all the facts and remarks about it published in books are direct copies of Squier and Davis' original survey.

Squier and Davis called it Clark's Works,

*Consulting the State Archaeological map, I find that, from Columbus to Portsmouth, through the plains of the Scioto—a strip of 15 miles wide and 100 miles long—there are 36 circles of earth and stone, 87 enclosures and combined works of earth and stone, 31 localities in which from 1 to 10 gravel or glacial kame burlins occur, 24 village sites and over 900 mounds. This is not the full number, as the map is only partially completed.

from the name of the owner. They also referred to it as the "Great Enclosure upon the North Fork of Paint Creek." As the Clark heirs had not owned the property for some years, we renamed it the Hopewell group, in recognition of the kindness and exceeding courtesy of its present owner, Mr. M. C. Hopewell.

Before proceeding with a detailed description of this interesting place and its remains, I desire to present a bibliography of the literature.* While Caleb Atwater first called attention to the group (probably in 1812-13, although his report was not published until 1820), Squier & Davis, who worked in 1844, '45 and '46 in Ross county, have given us our best description. All other articles have been written since the complete exploration of 1891-'92. While these combined articles (since Squier & Davis) cover something over 150 pages, two-thirds of them are but repetitions of striking or unique finds during the progress of the exploration, or are made up from newspaper reports. Many of them, written by myself, were hastily dashed off in the field during the excitement attendant upon unusual discoveries.

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Illustrated American. Vol. 9. *New Relics of Mound Builders*: W. K. M.; pp. 509-512.

Ohio Mounds. (Pamphlet distributed at World's Columbian Exposition by W. K. M.); pp. 1-7; 10-21.

It is but four months less than six years since our survey located on Mr. Hopewell's farm. I have been waiting for the chief of the Department of Anthropology of the World's Columbian Exposition, Professor F. W. Putnam, to publish a detailed report of the Hopewell exploration. A great many of our prominent archaeologists have looked forward to his report with expectation. I have received, in the last three years, over two hundred letters, requesting information as to when the report would be published and where it could be procured.* Of late, some of them have been critical towards me, because the volume has not been issued. Especially is this true of Rev. S. D. Peet, publisher of the *American Antiquarian and Oriental Journal*, who said in his January (1896) issue (page 63): "The report of the Commissioner-in-Chief of the Department of Anthropology at the Columbian Exposition has not been given and we do not know that it ever will be. Still, the public is entitled to the information."

I have always felt that Professor Putnam should edit the field notes calling attention to symbolism, art, evidences of commerce, migration, etc., which have been ascertained from the Hopewell material.

I am perfectly aware of my inability to do the subject justice. All my field notes, drawings and photographs, sufficient to make a volume of several hundred pages, were turned over to the chief of the department at the conclusion of the field work in the middle of February, 1892, and were in his hands dur-

Primitive Man in Ohio. 1892: W. K. M.; Chap. XV, pp. 184-197; Chap. XVI, pp. 204-241.

Report of the Ohio State Historical and Archaeological Society, covering field work of 1896. Vol. 6. Comparison Between Harness Mound and Hopewell Effigy by W. K. M.; Sec. 4, pp. 308-330.

Scientific American Supplement. August 27, 1892. Recent Archaeological Discoveries in Ohio: W. K. M.; pp. 13, 1896-13, 891.

Synopsis of Archaeological Work in Ross County. Pamphlet by W. K. M.; 6 pages.

American Antiquarian and Oriental Journal. Vol. XVIII: Rev. S. D. Peet; pp. 55 to 64.

The Swastika. (Report of U. S. National Museum, 1894.) Hopewell Mound: Dr. Thomas Wilson; pp. 888-894.

Archaeologist Vol 1. Sculptures from Southern Ohio Mounds: W. K. M.; pp. 208 to 213.

*Chiefly from well-posted students, frequently from archaeologists of reputation.

ing the Fair and for some time thereafter, and at present are in the Field Museum.

I have done my duty in keeping silence for these six years and feel that I am not committing a breach of trust in publishing what little I know of the work. The remaining officers of the World's Fair disbanded years ago and there is every reason to believe that all my notes and views will never be published as a part of our great Exposition, and that, if anything is given to the public, it will be through the medium of the Field Columbian Museum.

Of the field notes, illustrations and drawings in the possession of the Museum, I have copies of but a small portion. In a private diary at the time, I kept notes upon the more important finds. I also have a carbon copy of a synoptical report of some twenty pages, made to Professor Putnam. Readers must wait for the published report of the Field Museum for a detailed account of the skeletons, according to the field number and list of objects found with each.

So, in undertaking this detailed narrative of the work of the Hopewell survey, I speak from my field position, leaving the more subtle questions to be settled by better judges.

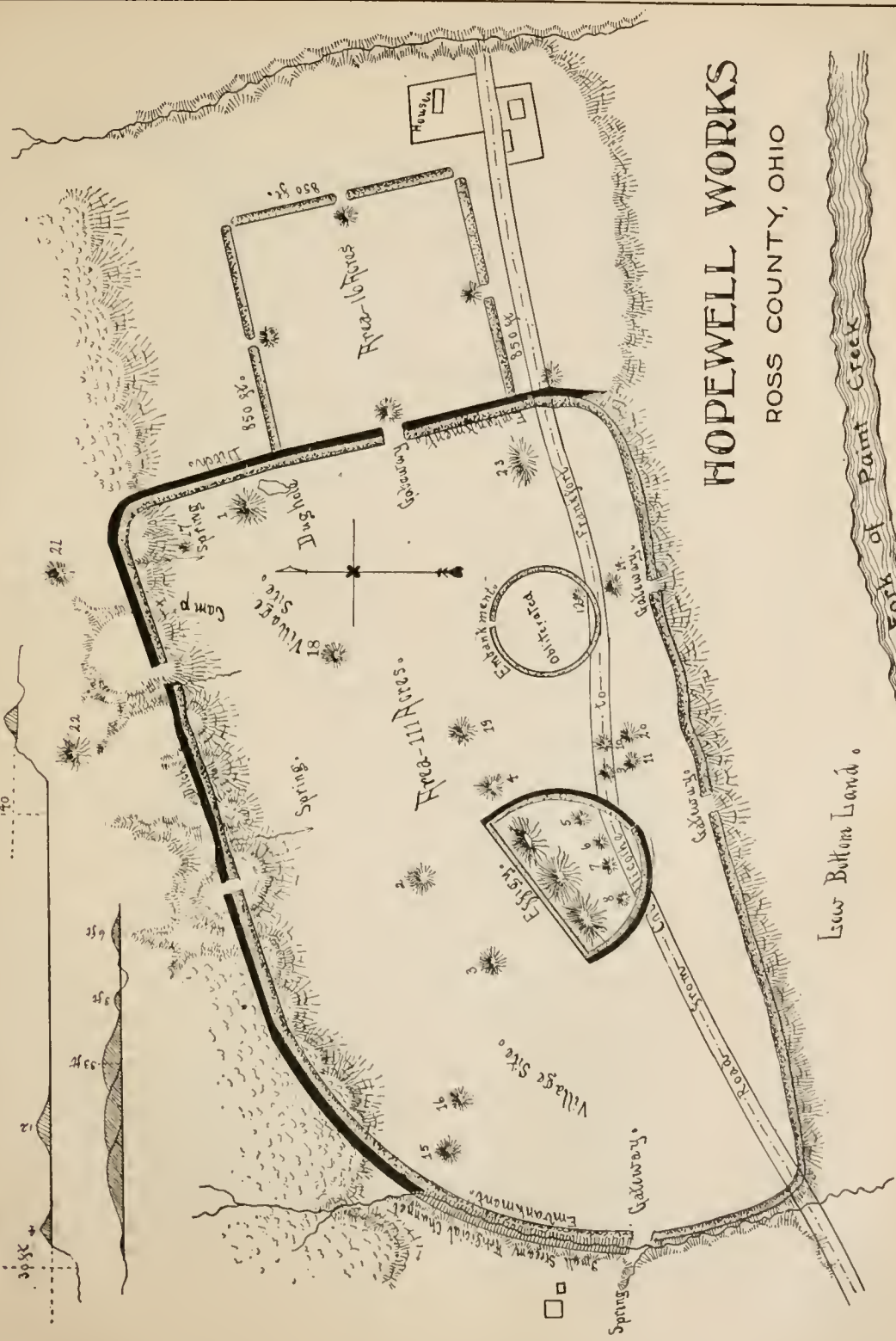
We had been working for some months in the Little Miami Valley in Warren county (Ohio), and, becoming convinced that further exploration of the stone graves was unnecessary, we decided to move into the famous Scioto region. If my memory serves me correctly, we had dug up more than a hundred stone graves, not only at Fort Ancient, but at Oregonia. All these presented similarity of construction, it being possible to divide the whole hundred into three types, and even these were closely related.

We loaded our camping outfit into three wagons, and, taking the best of our workers, discharging those who lived in the neighborhood, we traversed the country lying between Oregonia and Mr. Hopewell's farm.* I shall never forget that pleasant August evening when our tired teams, turning from the thoroughfare and pulling across a broad field, heavy with fragrant clover, just at dusk, halted near a magnificent spring.

*Eighty miles.

Sections.

38 ft
40
42
45 ft
49 ft
53 ft
60



HOPEWELL WORKS

ROSS COUNTY, OHIO

Low Bottom Land.

North Fork of Paint Creek

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While the cook prepared a hasty supper, we barely had time to put up our largest tent before darkness set in. The cook slept under a wagon, some of the men under another, and the artist, the clerk and myself took possession of the tent.

The next morning dawned bright and beautiful, and, as we stepped out upon the terrace, the low embankments and the high, imposing mounds of the group stood out in distinct outline. We located our camp on this terrace some thirty feet above the surrounding plain. We were distant about 50 yards from the spring.†

FIGURE I.

The map of the Hopewell group herewith presented is taken from Plate 10 of Squier & Davis' volume. I have added 4 mounds omitted by Squier & Davis, being Nos. 18, 19, 21 and 22: I have also marked the village site, our camp site and the spring located near same.

"Clark's Work; North Fork of Paint Creek.*

"The work here presented is one of the largest and most interesting in the Scioto Valley. It has many of the characteristics of a work of defense, and is, accordingly, classified as such, although differing in position and some other respects from the entrenched hills just described. The minor works which it encloses or which are in combination with it are manifestly of a different character, probably religious in their design, and would seem to point to the conclusion that this was a fortified town, rather than a defensive work of last resort.

"It is situated on the North Fork of Paint Creek, on the estate of W. C. Clark, Esq., and occupies the entire width of the second terrace, which here presents a broad and level plain, of exceeding beauty and fertility. Its general form is that of a parallelogram, 2800 feet by 800, with one of its corners somewhat rounded. On the side next the creek, it is bounded by a wall 4 feet high, running along the very edge of the terrace bank, and conforming to its irregularities; these, however, are slight. Its remaining

†In the June issue a picture of the camp will be given.

*Ancient Monuments of the Mississippi Valley, page 26.

sides are bounded by a wall and exterior ditch; the wall is 6 feet high by 35 feet base, and the ditch of corresponding dimensions. The lines ascend the declivity of the table land back of the terrace, and extend along its brow, dipping into the ravines and rising over the ridges into which it has been cut by the action of water. Wherever the ravines are of any considerable depth, the wall has been washed away; but in all cases leaving evidences that it once extended uninterruptedly through. The bank of the terrace is 30, that of the table land, 50 feet in height.

"The area thus enclosed is 111 acres. To the right of the principal work, and connecting with it by a gateway at its center, is a smaller work of 16 acres. It is a perfect square; its sides measuring, respectively, 850 feet. It has gateways at the middle of each side, 30 feet wide, and covered by small mounds, which are placed 50 feet interior to the walls. There are gateways also at the two outer corners, which are unaccompanied by mounds. The opening which leads to the principal enclosure is twice as wide as the others. The walls of the smaller work are much lighter than those of the large one, and have no attendant ditch.

"Within the area of the great work are two small ones; one of them is a perfect circle, 350 feet in diameter, bounded by a single slight wall, with a gateway opening to the west; the other a semi-circular enclosure, 2000 feet in circumference, bounded by a slight circumvallation and ditch as represented in the plan. Within this last enclosure are 7 mounds; 3 of which are joined together, forming a continuous elevation 30 feet high by 500 feet long, and 180 broad at the base. The ground within this work appears to be elevated above the general level of the plain, whether designedly or by the wasting of the mounds, it is impossible to say. There are other mounds at the points indicated by the plan, most of which have been explored; with what results will appear in the chapter on mounds. It may, nevertheless, be proper to remark that nearly all the mounds examined were places of sacrifice, containing altars; thus confirming the opinion already confidently expressed respecting the character of the work.

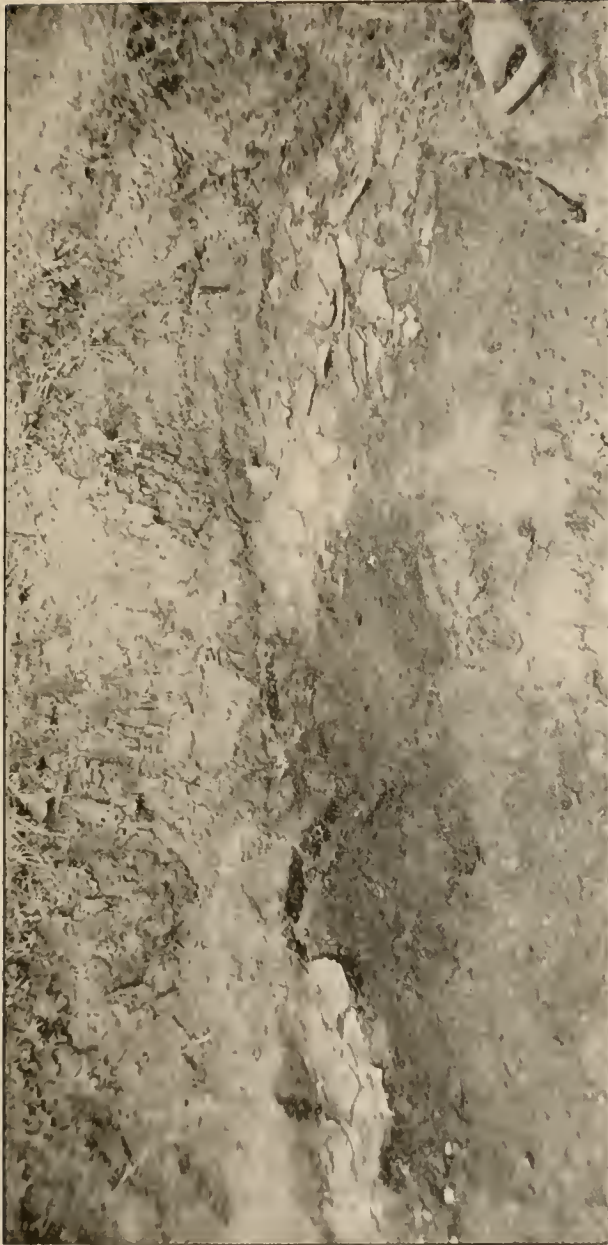


FIG. 2.—Layer of mica in mound 17.

"Where the defenses descend from the table lands to the left is a gully or torrent bed, which, before the construction of this work, kept the course indicated by the dotted line *x*. It was turned by the builders from its natural channel into the ditch, along which it still runs for a considerable distance; but at one place it has broken over the wall, obliterating it for nearly 200 feet. It is dry at most seasons of the year, and, unless much swollen by the rains, keeps the course of the ditch, terminating in a deep gully, formed by the flow of water from a copious and un-failing spring. This gully is made to answer as a ditch, for the space yet intervening to the edge of the terrace. It is 15 feet deep by 60 or 70 wide. In several other instances this artificial change in watercourses has been observed.

"The gateways of this work are six in number; one opening into the smaller enclosure to the east, 2 upon the table lands, 1 to the spring first mentioned, and 2 others towards the creek. Two considerable springs occur within the walls. It is not necessary, however, upon the hypothesis already advanced in respect to this work, to suppose its ancient population wholly dependent upon these sources for their supply of water; inasmuch as it is very evident that many centuries have not elapsed since the creek, now 100 rods distant, washed the base of the terrace upon which it stands. Indeed, until recently, and until prevented by dykes above, the creek at its highest stages continued to send a portion of its water along its ancient channel.

"The slight wall along the terrace bank is composed chiefly of smooth, water-worn stones, taken from the creek, and cemented together by tough, clayey earth. The wall of the square is wholly of clay, and its outlines may be easily traced by the eye at a distance, by its color. It appears, as do the embankments of many other works, to have been slightly burned. This appearance is so marked as to induce some persons to suppose that the walls were, in certain instances, originally composed of bricks partially baked, but which have, in process of time, lost their form, and subsided into a homogeneous mass. That they have, in some

cases, been subject to the action of fire, is too obvious to admit of doubt. At the point *z* in the lower wall of the square, stones and large masses of pebble and earth, much burned and resembling a ferruginous conglomerate, are turned up by the plow. May not this feature be accounted for by supposing the walls to have been originally surmounted by palisades, which were destroyed by the action of fire? Such a cause, however, seems hardly adequate to produce such striking results.

"The broken table land upon which the main work extends forms natural bastions at *T* and *S*, which have gateways opening to them. At the point marked *C* in the embankment, a quantity of human bones, calcined, are observable.

"Such are some of the features of this interesting work; and if their detail has been tedious, it may be urged in extenuation of such minuteness that descriptions have hitherto been quite too vague and general. Minute circumstances are often of the first importance in arriving at correct conclusions. The comparative slightness of the wall and the absence of a ditch at the points possessing natural defenses—the extension of the artificial defenses upon the table lands overlooking and commanding the terrace—the facilities afforded for an abundant supply of water as well as the large area enclosed, with its mysterious circles and sacred mounds, all go to sustain the conclusion that this was a fortified town or city of the ancient people. The history of its fall, if its strange monuments could speak, would, perhaps, tell of heroic defense of homes and altars and of achievements in siege and assault.

"The amount of labor expended in the construction of this work, in view of the imperfect means at the command of the builders, is immense. The embankments measure together nearly three miles in length; and a careful computation shows that, including mounds, not less than 3,000,000 cubic feet of earth were used in their composition.

"Within this work some of the most interesting discoveries recorded in this volume were made."

First, let us note the obliterations. The circle enclosing mound No. 12 is entirely obliterated and could not, save by a slight discoloration of the soil in one or two places, be traced by our survey. Mounds Nos. 9 and 10 have been destroyed both by the railroad and the wagon road.* The 16-acre square, shown to the right or east of the main enclosure, is much lower than it was during Squier & Davis' survey. Its enclosed mounds are barely discernible.

Atwater implies that the work was much more prominent in his day than we understand it to be from Squier & Davis. He says the Effigy was composed of three mounds, 35 feet high and 400 feet base. Squier & Davis speak of the wall as being 6 feet high and 35 feet base. They speak of the Effigy as 30 feet high and 500 feet long. Our measurements give as an average for the embankment 4 feet in height and 30 feet in width. In some places it reached the height of 6 feet, especially in the woods just below the cross sections on the map. That portion lying nearest the square is from 50 to 60 feet base and 5 feet high.

Mound No. 11 in an orchard near a brick residence was not dug by the survey at the request of the tenant, Mr. Beard.

Nos. 21 and 22 are upon the table land some 300 yards back from the embankment and were overlooked in the previous survey. They are composed of very tough clay and contained absolutely nothing.

Squier & Davis have given such a good description that I will only call attention to the points overlooked by them. The entire space enclosed was occupied as a village site, but the indications are most numerous where the words "village site" have been placed on the map. Although manifestly a work of defense, yet I cannot understand how the Hopewell group could have been used as such. The north section of the wall mounts from the second to the third terrace some 35 or 40 feet in height. The wall is low. The ground 100 feet north (or back) from the wall commands a plain view of the mounds and village sites below. An arrow could be thrown from this table land as far as mound 18. Dr. Wilson, of the Smith-

*The Baltimore and Ohio Railroad passes just south of the road, through the enclosure.

sonian Institution, a visitor to our camp, and Dr. Cresson, who was on the survey, could not understand how the works afforded any protection whatever to the inhabitants. The range of high ground to the north, commanding the entire area below, was at least half a mile in length. The wall, except in the woods, does not appear to have ever been very strong, and even at that point, surmounted by palisades, I am of the opinion that a party of warriors could break through at any desired point. A heavy fire from this commanding position would drive the inhabitants as far south as a line drawn between mounds 16 and 18. Part of the besieging force could continue such a fire, while others made a breach in the walls or palisades, and, entering, deployed along the base of the terrace. They would have a superior advantage over the inhabitants, being then upon the same level with them, and protected by a fire from their friends on the heights above. However, this is one of the puzzles connected with the Hopewell group, and I only offer my opinion, based upon a residence of a number of months, during which time I carefully studied the place.

The springs mentioned by Squier & Davis are not strong today, with the exception of the one near the northeast corner, where we located our camp. The others have nearly dried up.

The distance from the southern edge to the North Fork of Paint Creek is about a third of a mile, being a little farther off than indicated by Squier and Davis upon their map.

The central, and, of course, the most interesting feature of the entire work, is the Effigy. It is shown by both Atwater and Squier & Davis as a union of three mounds; four other mounds were situated just south of it, and they are all surrounded by a semi-circular enclosure. This enclosure, together with that just east of it, may represent a sun symbol, and the square farther east may indicate the four corners or the four winds. Explorations seem to point to such ceremonial purposes for their erection. We cannot, after explorations, consider the Effigy as being composed of three mounds, but that it is formed by the grouping together of a number of small mounds, and

that over their irregular contour was heaped a great mass of earth and gravel, giving it its present appearance. We called it the "Effigy" because, externally, it represented the human trunk, but internally, its contents gave us no authority for such a name. However, the term is a convenient one and, since it has been adopted, it might as well stand.

The mounds of the group, ranging from No. 1, which can only be located by broken specimens upon the surface and presents no rise of ground whatever, which was originally but 3 feet high and 40 feet base, to the great Effigy, which we have stated to be 510 by 220 feet. As to the latter, measurements have been given some three or four times, and they have always been stated differently. This is easily explained when one considers the peculiar character of the structure. Dr. Wilson in the "Swastika" (U. S. National Museum Report, 1894), gives its measurements as 530x250 feet. This was based on Mr. Cowen's survey after the digging had been going on for some time and the original diameter of the mound had been much disturbed. In a pamphlet distributed at the World's Fair, I stated that the structure was 510 feet long and 220 feet wide. In the *Illustrated American*, July 30, 1892, Dr. Cresson gives me the measurements as 500 feet by 210 feet, being a difference of 10 feet each way. In the *Scientific American Supplement* for August 27, 1892, I stated that it was 500 feet by 213 feet. It will be readily seen by those who are acquainted with large mounds that a difference of opinion may arise as to where the wash or feather edge of a mound ends and the natural surface begins. Dr. Cresson and I differed on every occasion, 5 or 6 feet on a side or 4 or 5 feet on the end. This, in a structure of such great dimensions, amounts to nothing, as it refers to the slope's edge only a few inches in height, which might result from plowing or washing. I simply mention it because one or two archaeologists have called attention to the discrepancy in measurements. The exploration of the Effigy shows the real

long by 160 feet in its widest place. Therefore, it will be seen that all this hair-splitting over a few feet of disturbed edge amounts to nothing, for we have a clear and definite mound to have been a trifle over 400 feet statement on Mr. Cowen's survey and in our digging as to the diameter of the original structure.

Early upon our first morning, I set the men to surface searching for evidences of village sites, started the cook to Chillicothe for provisions and, taking from my trunk the Archaeologist's Bible, Squier and Davis' volume, I carefully studied their explorations and map. Then I walked over the enclosure and inspected the various mounds. I decided to begin with No. 17, which was some 200 feet from camp, and calling in the men, set to work. The structures were opened in the following order: After No. 17, Nos. 18, 19, 2, 23, 4 (I then set a man at work on the surface with a hand trowel where stood No. 1), 20, 3, the Effigy, 15, 16, 21, 22, 5, 6, 7 and 8. I may be mistaken as to 22 and 8, but the order in which they were opened matters but little. Several drawings and photographs were made of No. 17, one of which I reproduce (Fig. 2), showing a peculiar layer of mica, which extended almost entirely through. No. 17 is 89 feet wide and 79 feet high at the center. As many as 3,000 sheets varying in size and thickness were taken from it. I remember shipping a barrel and a soap box from this structure, filled with nothing but mica. Many fine bone needles, mostly broken and damaged by heat, a rude altar full of bones and ashes, two or three hatchets and some spools of copper, ornaments, shark's teeth and about 200 pounds of galena were taken from the structure. This galena was almost pure lead, showed no contact with heat, and seems to have been preserved by the natives because of its brilliant color. There is no reference on the part of Squier & Davis to this mound and they do not number it on their map.

(CONTINUED NEXT MONTH.)

ARCHAEOLOGY AT THE TENNESSEE CENTENNIAL.

To The Antiquarian:

In response to your request for information as to the Archaeological exhibit at the Tennessee Centennial, I am able to give but a brief statement.

A handsome fire-proof building has been erected for the "Department of History and Antiquities, of which the writer is chief. It occupies a central and prominent place upon the Exposition grounds. The building is in the form of a Greek temple, copied in part from the Erectheum at Athens. Having been designed before the Exposition assumed its present large proportions, it is unfortunately very small for the purpose for which it was intended, having a floor space of but 4000 square feet.

Tennessee is so rich in historic material and the various societies, Historical, Confederate and revolutionary, are claiming so much space, that a comparatively small section will have to be assigned to the Archaeological exhibit.

This is greatly to be regretted, as Tennessee is a very fertile archaeological field, rivalling, if not surpassing, Southern Ohio in its wealth of prehistoric treasures. There is ample material in the various collections in the State to fill the entire building with fine typical specimens illustrating ancient life in Tennessee.

A few of the finest collections will be placed upon exhibition, however, and students and visitors interested in Archaeology may be assured that they will find much to interest and repay them in visiting this department. A large selection of fine types of ancient pottery of the middle Tennessee section, and of idols, images of stone and pottery and of engraved shell gorgets, will be seen. More images and engraved gorgets have been discovered in Tennessee than in all the other Southern States combined.

The beautiful polished stone discoids will also be shown in great variety. They are a specialty of this section, which has supplied the great collections of the North and East with them.

The rare and unique flint implements, the long ceremonial flints, the peculiar scepters, sickles and maces, and fine collections of mechanical and agricultural implements in stone and bone, will be exhibited.

In 1895 a very remarkable collection of some 47 flints was discovered in a single deposit, in an ancient cemetery in Humphreys County, Tennessee, west of Nashville. All the rare forms of ceremonial flints and totems were represented in the group of specimens. There were many of the long, narrow, delicate types. One was 27½ inches in length, the longest flint of this class in the world, so far as known. Others were about 22, 20, 19 and 18 inches. Either the originals, or casts of these fine flints will be exhibited. They will also be illustrated in the second edition of the *Antiquities of Tennessee*, soon to be issued.

In the archaeological exhibit at the Centennial there will also be a great variety of ancient pipes from the mounds and stone graves of Tennessee, and of banner stones, copper and shell ornaments and other specimens representing the arts and industries of ancient Tennessee. Some of the archaeological collections will probably be placed in the Agricultural building, and in the various County and State exhibits, for want of space in the Historical building.

The beautiful pyramid building erected by the city of Memphis will probably also contain some collections from Tennessee and Arkansas.

The pioneer, military and political history of the State of Tennessee will be well illustrated in the exhibit in the History Hall. The portraits of some of the noted pioneers of Western civilization, and of Tennessee's military heroes, can be seen there—the portraits of Governor John Sevier; of James Robinson, the founder of Nashville; the various portraits of General Andrew Jackson; of Sam Houston; of David Crockett; Governor Shelby; Presidents Polk and Johnson.

The earliest record of the State and territory and the Revolutionary and Confederate relics will all form part of the exhibit, and help to make it attractive and educating.

G. P. THRUSTON,

Nashville, Tenn., April 26, '97.



*AN ANCIENT WOOD CARVING.**

The known history of the Kanawha valley covers but a short period of time. It is less than 150 years since the advent of the present white race. With this we are all familiar, and I need not dwell upon it; but profound mystery enshrouds all antecedent

*Synopsis of a paper read before the West Virginia Historical and Antiquarian Society by its President, Dr. J. P. Hale: Charleston, W. Va., January 19, 1897.

time and the unknown history of the preceding race or races—one or many—who, in turn, have occupied this beautiful valley, living out their life dramas here, loving, hating, struggling, hoping, dying, as have those who followed them.

The only records of their life work left here are earth mounds and enclosures, stone mounds and cairns, stone wall enclosures, flint and stone tools, and implements for the chase, for war and for husbandry; some rude pottery, a few pictured

rocks, their many graves and, so far as we know, one isolated specimen of their handiwork in wood carving, which last is so unique and interesting that I shall attempt to describe it with some particularity.

Having heard some accounts of a carved wooden figure, statue, image, idol, heathen god, or whatever it may be called, said to have been found in an almost inaccessible hole in the high cliffs, some miles above this city, I was tempted to go up and see it for myself and satisfy my own curiosity, half suspecting that others had been, and fearing that I was about to be, the victim of a huge practical joke. What I saw, however, was so different from what might have been expected, that I shall give a history of its discovery, as I learned it, substantially as follows:

Master Frank F. McCannahay, a handsome and intelligent lad of 15, with three other, smaller boys—Frank being the eldest—started out from the little village of Lewiston, twelve and one-half miles above this city, for a Sunday evening's scamper through the woods. They climbed the high mountain just back of Lewiston, to a line of cliffs which cap the mountain, which is here very steep and rough, rising to about 900 feet above the river level. The cliffs are of coarse sandstone, with innumerable holes, cavities and crevices in the face, caused by the unequal disintegration of the harder and softer portions of the rock. The attention of the boys was attracted by a horizontal crevice appearing in the face of the cliff, which is about forty feet in height; the crevice being near midway up the cliff. Its apparent inaccessibility stimulated the natural curiosity and love of adventure of boys of their age, and they determined to reach and explore it, if possible. At one end of the cliff they found a dead tree blown down, but leaning against the cliff; on this they climbed up to the horizontal crevice, which they were able to follow, by narrow footholds for some distance, when they came to the limbs of a small chestnut tree growing up near the face of the cliff. By the aid of these limbs, as supports, they advanced a few feet further, when the crevice opened up wider, giving room to crawl through it and pass an angle of the cliff, be-

yond which there was scarcely any foothold, and absolutely no handhold. By leaning closely against the rock above, they picked their way cautiously on scanty footing, until they rounded another angle of the cliff, where they discovered a cavity running into the rock, into which they crawled, feet foremost, Frank leading the way, and where, to their great astonishment, they found this wooden image, lying on its back, with a flat stone, about four inches in thickness, lying on it, extending from the nose to about the knees. This the boys lifted off and, boy-like, threw it down the cliff, breaking it to pieces. This flat stone was also sandstone, but of different color and texture from the stone in the interior of the cavity, and was evidently taken there from without, with much trouble, to lay over the image when it was deposited.

Within the cavity, beside the image and its overlying flat stone, there was nothing found but a few dry leaves, probably blown in by the wind. The image was lying about north and south, the head to the south and near a smaller hole or extension of the cave too small to admit the image. How the boys got the thing down it is hard to tell, but they slid and shoved it along between the upper and nether faces of the crevice until they got it to a safe footing, when, by the aid of the chestnut limbs and the fallen tree, they finally, with much labor, got it to the ground, and thence down the mountain to their home.

Having heard this interesting narrative of the boys' adventure, I determined to go myself to see this curious cavity in which this mysterious image had so long lain hidden from the world. I climbed the 900 feet of precipitous mountain with much labor and fatigue. Getting to the cliff I then climbed the fallen tree, thence along the face of the cliff steadied by the limbs of the chestnut, thence crawling through the crevice, emerged on the front face of the cliff and looked down to the broken rocks at the base twenty feet below. The wind was blowing briskly, coming with frequent sudden gusts which might easily unsettle one's equilibrium. Considering discretion the better part of valor, I retraced my steps to the solid ground and returned to the village.

It is a curious fact that the mouth of the cavity in which the image was found cannot be seen from the bottom or top or either end of the cliff; it can only be seen when you have gotten to it.

The statue, when erect, stands upon a pedestal and holds in its arms an animal pressed against its breast. The whole figure—statue, pedestal and animal—are of one piece, carved from a solid block of wood, a section of a tree. The pedestal is 13 inches in diameter and 8 inches high, with a round hole through the center 4 inches in diameter at the bottom and 3 inches at the top. It is suggested that this may have been for hoisting it on a totem pole as do the native tribes of Alaska to this day. The statue has no feet, the figure joining the pedestal at the ankles; from this point to the top of the head is 3 feet, thus making it 3 feet 8 inches from the bottom of the pedestal to the top of the head. The head, from front to rear, is $6\frac{1}{2}$ inches; from side to side about the same, and from top of the head to chin $7\frac{1}{2}$ inches; across the shoulders 11 inches; across the hips 9 inches; through the chest front to back $6\frac{1}{2}$ inches. It stands about three-quarters face front, looking a quarter face to the right. The animal in its arms is 14 inches from head to tail. The weight of the whole is about 50 pounds. It is difficult to determine of what wood the figure is carved; some think it is locust, some pine, some ash, and so on. My opinion is that it is chestnut, and I am strengthened in this opinion by the fact that the little insect borers have punctured it with innumerable little round holes from the size of a pin to the size of a quill, but mostly the size of knitting needles. It is known that chestnut timber is very liable to be attacked and much bored by these little worms. The general appearance of the statue gives the impression of a strong, erect, square-shouldered, heavy-set figure, fairly well proportioned, except for the apparent shortness of the legs and stumpiness of the figure, from the lack of feet. I examined the surface of the figure carefully to see if I could discover any evidence of the use of edged tools, but the slowly, though surely gnawing tooth of time has so far the rough contours that it is impossible now to tell whether it was carved with metallic rounded the sharp angles and toned down

tools or fashioned by the slow-cutting and abrasive action of flint implements, or some other now unknown tools, wielded by some now unknown race. The features of the statue are now no longer distinctly recognizable; the elevations and depressions at the proper places in the face are only suggestive of the more distinct features that doubtless once existed.

The right ear has decayed and is gone; the whole right side shows more decay than the left; the left ear is sound and stands out in full relief. The body generally is sound and emits a resonant, woody ring when struck. Where the surface lines of the body cross the grain of the wood the softer cellular woody fibres between the harder annular growths having somewhat wasted away, has left the latter standing in relief, giving the surface a ridgy, corrugated appearance. The hands, if ever fully formed, have now decayed and wasted away to mere shapeless stubs.

The animal carried in the arms and against the breast probably had some significance; possibly a peace offering intended for sacrifice. Opinions differ as to what animal is intended to be represented. A lamb is at once suggested, but it may possibly have been a buffalo calf. It has a decidedly bovine head, and the hump on the shoulders between the neck and the back is strongly suggestive of the lines of a buffalo's back. Buffalo were abundant here when the whites came to the valley, and presumably had been from indefinitely remote times.

When, by whom and for what purpose this image was carved, and who secreted it in this almost inaccessible place, are impenetrable Kanawha mysteries. Its appearance as above stated gives the impression of very great age. In Josh Bell county, in Kentucky, in 1869, a wooden image was found under circumstances very similar to those connected with the discovery of this one. It was hidden away in a dry cave in the rocks where it was not likely to be found. It was carved from pine and in head and body is about the size of ours, but it is without legs or feet. It is preserved in one of the public institutions of the state. It also is believed to be very old, but like ours, there is no clue to its age or history.

NOTES ON ANCIENT MAN AT DURHAM, IN THE DELAWARE VALLEY.

There is not, perhaps, a more critical subject left to the discretion of scientists in which they differ more widely in their opinions, than in matter pertaining to the antiquity, status and culture of man in America. The subject, as we behold it today, is the finished work of the past; its history, when rightly deciphered, is the history of the development and evolution of humanity from the lowest depth of barbarism, to a higher civilization. We are not surprised that many reach conclusions diametrically opposed to those of others, although engaged in the same lines of research. We often try to judge the work of the past from modern standpoints or conditions, when we know that the arts of the past were developed thousands of years ago, when modern conditions could not have existence. Science teaches that all life evolved from a lower to a more differentiated condition, so we may rest assured that the road over which humanity traveled was not only a long one, but a very tortuous one. All life has its infancy, its moments of maturity, an interval between progress and decline, and eventually fades away.

Primitive man had no newspaper or expert to tell him what to do or how to shape his implement of bone, wood or stone. Hence we are apt to consider him a tiresome, slow, old fellow, a barbarian of the first water, and, in fact, he was certainly addicted to strange ways in his old age, as is instanced by the fact that his arts, agricultural tastes, fruits and grain cultivated by him have never been forgotten, and all subsequent progress has, to a great extent been built upon this foundation.

Many centuries ago, ere the descendants of Tubal-Cain stepped upon the platform, when primitive man had attained the zenith of stone art, all were busy, attempting to make nature yield them a living by hunting and fishing, or in agricultural pursuits. The above are conclusions from archaeological data gathered during forty years' practical archaeological and geological field work. Some writers, however, tell us that practical field workers, no matter how large their experience in the archaeological field, are not

competent to form a correct opinion. Be this as it may, exploitation in the Delaware valley has brought to light abundant evidence that, after the Delaware river had cut its way through the pre-moraine gravels and formed its present channel and left terraces, a race of men dwelt upon its banks and terraces, as well as some distance along the streams emptying into the Delaware, who manufactured and used rude implements of stone. These gravels and terraces are, in a geological sense, comparatively recent; but, archaeologically considered, are of great age, extending back some thousands of years.

An important factor in the finds of the rude implements, as far as northern Bucks county, eastern Pennsylvania, is concerned, is the fact that, in the gravel deposits, the implements are found at a depth of from one to twenty feet from the surface, while on the Indian village sites on the southern boundaries of these gravels, we find an occasional rude implement, similar in construction and design, mixed among the modern Indian implements on the surface, thus giving a clue, which, if carefully followed, may solve an important problem. We have as yet no certain knowledge whether glacial man was displaced by the red Indian, or whether the two races blended into one, or whether primitive man, through the numerous intervening centuries gradually evolved to the advanced status of the race that occupied the American continent when discovered by Columbus. But certain it is that the people then occupying this continent were far advanced in the polished stone age. It may be remarked here that paleolithic man left no monuments, he built no houses for either the living or the dead. It is even doubtful if the dead were buried at all or had a place of sepulcher. Implements of rude manufacture only have as yet been discovered, to allow us a glimpse of paleolithic man and his mode of life. However, two successive and strongly-marked differentiated stages of art culture exist in the Delaware valley, with isolated attempts, linking the successive generations of these primitive people, denoting a continuous occupancy of this section throughout the more recent geological changes, as is clearly evidenced

by the art implements discovered in geological positions denoting great age.

Points to which comparatively little importance was attached forty years ago have now become fraught with meaning. Experience is a wonderful teacher. We are evidently on the threshold of discoveries of the greatest importance to the race which now occupies the American continent. Much has been accomplished by explorers in the archaeological field during the last twenty years, yet it is desirable to fill in the missing portions which experience tells us can be largely accomplished by patient research.

A distinguishing feature of these art implements is that all found in the glacial and post glacial gravels along or throughout the valley of the Delaware are of rude manufacture and nearly all are found at varying depths, covered by glacial till and debris whereas the polished implements in this section are not thus found, but are, as a rule, lying on the surface of the ground, or in some instances covered by soil to a depth of a foot or two. In all countries where art implements of stone have yet been discovered we find them essentially as above, the polished or modern implements on or near the surface, and the ruder ones in the glacial and post glacial gravels, thus showing that the different stages of stone art culture must have endured for long periods of time, and comprised an extensive population. They are found substantially over the whole world, differing, however, in the material employed, according to the locality where obtained, but the general likeness in the implements prevails throughout, notwithstanding the minor differences noted by various writers.

In the foregoing we have alluded to the fact that at least two strongly marked differentiated stages of stone art existed before the discovery of America by the Europeans. This by no means calls for another than the Indian to mark the advent of man in the Delaware valley; but does call for the fact that between the period when man first appeared upon the banks of this stream, and the day of his discovery by the Europeans, he slowly evolved from the rude to the polished stage of culture. The rude implements in this section consist or are prin-

cipally of argillite and chipped pebbles, boulders and residuary gravels, etc., etc., while the highest phase of polished stone culture consists of quartz, jasper, chalcedony, interspersed with copper and other ornaments in a finely finished condition. We know positively that man, originally, was in the stone age, and having a diversity of geological formations to choose from for the manufacture of his implements, and all being equally accessible along the banks of the Delaware, he may be supposed to have used material best suited for his purposes and needs from the beginning of his occupancy of the valley of the Delaware and adjacent country.

American drift implements found in undisturbed geological deposits denoting great age, are as clearly works of art as the European implements found under similar conditions, and they speak for themselves when placed side by side. There is no evidence of a hiatus. Argillite, an easily worked material, and no doubt one of the earliest used by primitive man, was never discarded.

Probably nowhere on this continent have traces of primitive man and his successors proved more abundant than on the banks of the Delaware river, beginning at tide water and extending to the line of the terminal moraine. If observers in the archaeological fields will continue alert and enthusiastically in earnest in the future as in the past, what can we not hope for in the additions to our knowledge already obtained? What we want is field work, by observers trained to see accurately, able to determine at once whenever a find is made whether it will prove a valuable data in this line or not.

CHARLES LAUBACH.

During the year 1896, the collections of the American Museum of Natural History have been enriched by gifts from the Duke of Loubat, aggregating in value not less than \$15,000. These include casts of ancient Mexican and Central American inscriptions and monuments by Charnay, a similar collection of casts by Mandsley, casts from the sculptural slabs from Guatemala, which are now in the museum at Berlin; photographs of the Codex Legislative and a chromo—photographic reproduction of the Codex Vaticanus.

THE CHICAGO CRESCENT.

The archaeological remains in and about the city of Chicago are numerous and important, and their careful study gives us much needed light on the archaic history of that part of the Mississippi valley lying north of the Ohio river.

Of these remains it is my purpose, from time to time, to offer, through the columns of *The Antiquarian*, short descriptive sketches that may be of interest to students as well as to general readers. In this initial paper I wish to call attention to a rude stone implement that seems to have escaped the notice of collectors, as Mr. Averill's "Indian Plane" did; and possibly may only be found in this locality. At any rate, I have not yet seen it described in print. The class of implements I refer to is shown by Fig. 1, and

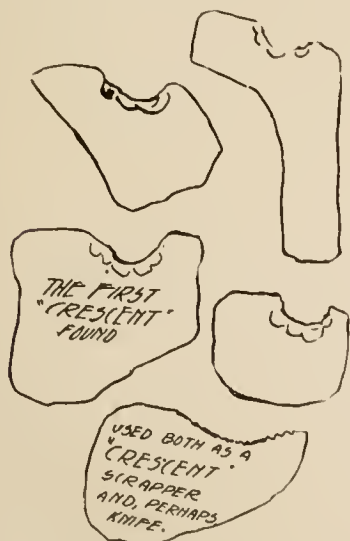


FIG. 1

which I call, for want of a better name, the Chicago Crescent. They were made from fragments of yellow chert found here in great abundance, especially along both the ancient and present beaches of Lake Michigan. In point of workmanship they are

quite simple and primitive, and were probably made to serve temporary purposes. The use to which they were applied was obviously that of arrow scrapers for rounding and polishing the shafts of arrows and spears.

The first one of these rude tools I discovered was near the corner of North Clark street and Argyle avenue, Lakeview, on the side of a sand hill when examining the site of an old flint chipper's open-aid workshop. In prosecuting the search I discovered the shop refuse of a still older artisan two or three feet below the first one; and in this lower deposit of flint chips the crescent was brought to light.

I have since found them frequently, more commonly about the old shore lines of the lake and more seldom in village or camping sites. Dr. Thomas Wilson, curator of prehistoric anthropology in the National Museum, to whom I sent specimens of them, informs me that stone implements in every respect identical with these are found among the earliest known objects of the stone age in Europe. They vary in size from an inch and a half in length to four inches or more, and from one to three inches in width, but preserve substantially the same uniform shape. In one of my excavations on one of the ancient beaches, half a mile inland from the present lake shore, at the depth of eight feet, an old stone-chipping site was revealed, abounding in the ordinary refuse of such industries, from which I reclaimed the bone awl, represented in Fig. 2, associated with several of the crescents, scrapers and fragmentary and unfinished implements of different kinds.

The opinion has been expressed by experienced archaeologists that these crescents, occurring almost invariably about the shore lines of the lake, may have been employed in some aquatic pursuits, or in some method of fishing; and such may have been the case; but if so, their design as cutting or scraping instruments seems quite obvious. In our archaeological investigations we cannot overlook the rudest or simplest instrumentalities wrought by primitive man as aids to his improvement or social advance-

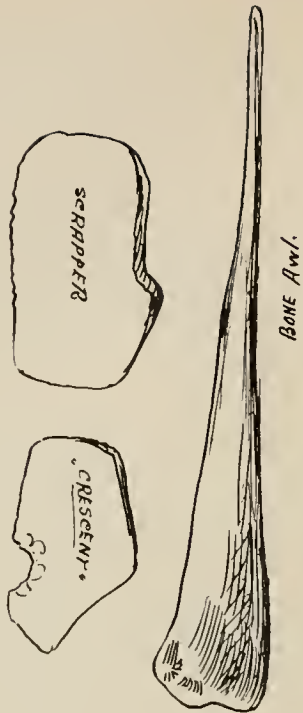


FIG. 2.

ment. And it may happen that a trivial object like this crescent-shaped scraper may serve as a key to open to view some phase of aboriginal life that otherwise would remain unintelligible.

It will be gratifying to learn from collectors of prehistoric stone art remains if the implement I have described has been found elsewhere in our country, and if it has in what particular localities in reference to lakes or water courses.

KARL DILG.

The Ethnologic collection made by Dr. Alexander Agassiz, during his recent trip to Australia, New Guinea and Samoa, has been given to the Peabody Museum of Archaeology and Ethnology. This collection includes models of native boats as well as many implements, weapons, etc.

THE CLIFF-DWELLER'S "SANDAL LAST."

In the autumn of 1889 two business men of our town, Messrs. Allen Dunaway and John A. Jones, sought needed recreation and respite from the cares and drudgery of their mercantile pursuits in an extended trip through the mountains of Colorado. In the course of their peregrinations they reached the town of Durango, then the railroad terminus in that direction, and securing horses there they continued their journey to the Wetherhill ranch on the Mancos. Under the guidance of Dick Wetherill, who is familiar with every peak and crevice and stream, and knows every Indian in all that region, they inspected for several days the eroded chasms and rugged precipices of the Mesa Verde and adjoining territory once occupied by the cave-dwelling Pueblos.

The gentlemen named are not archaeologists, but when in one of the obscure side canyons they espied far up the rocky escarpment a rude stone structure stuck against the face of the cliff like a mud-swallow's nest; they clambered up to and into it—forestalling other vandals—and gathered up indiscriminately all portable relics of ancient life it contained, which in time they presented to me.

In this valuable collection was a stone implement of novel pattern, such as I had never before seen. It is represented by Fig. 1, drawn one-fourth of its actual size. It is ten and three-fourths inches in length, four and three-fourths inches wide in its broadest part, and three and one-fourth inches at its narrow end. Its thickness in the middle is somewhat over half an inch, sloping down to square edges the fourth of an inch thick. The rock from which it was carved is a yellow, crystalized limestone, but its smoothly polished exterior is now quite dark from long usage and exposure. Desiring to learn the probable use of this odd-looking specimen I made an exact copy of it in plaster, which I sent to the Smithsonian Institution for identification. In due time I was informed that it was a novelty there also and the first of its kind yet received. On visiting the Smithsonian some time later I noticed my plaster cast in one of the cases, fully accredited, but unnamed,



FIG. 1.

the sole representative in that vast collection of an unknown primitive handiwork.

Near the Anthropological building of the World's Columbian Exposition at Chicago in 1893, it will be remembered, was an intended imitation of a Mesa cliff and cave house. It bore some resemblance to a rocky hill, and its interior was an artful reproduction of an extensive cave, containing, besides some indifferent copies of old Pueblo cave ruins, a great collection of relics from many rifled cliff-dwellings of the Verde and San Juan canyons. Among the many remains of aboriginal industrial arts exhibited there were several counterparts of my specimen, identical in outline, but varying in material, and ranging in length from eight to fourteen inches with proportionate widths and thickness. Inquiries of the attendants failed to elicit any information regarding the service they had rendered in the domestic economy of their ancient owners. There were also, in another department of this exhibit, several varieties of sandals, some of which—similar to a few in my collection—conformed exactly in shape and dimensions to the flat, polished stones in question, having the same curious offset at the base of the upper quarter curve, as seen in Fig. 2. The sandals of this style are simply flat mats made

of the split fibres of yucca leaves woven in one piece, basket-like, and not plaited in braids curved around and sewn together at the edges as straw hats are made. The strange correspondence in form and size of the smooth stones and sandal mats suggested some intimate connection in their use, or association in the manufacture of one or the other. That the mats were worn as sandals was plain, as several of them still retained their toe and heel fastenings, and they so nearly approximated in contour the bottom of the foot as to indicate their employment for its protection from contact with sharp rocks and rough gravel. The stone implements must then in some way have been brought in requisition in fashioning the footgear. If the annual reports of the Smithsonian Institution or Bureau of Ethnology described this class of implements my search was not successful in finding it. The first printed mention of them that fell under my observation was in the great work of Baron de Nordenskiöld, entitled "The Cliff Dwellers of the Mesa Verde," published in Stockholm in 1893. There is figured in Plate XXXIX of this magnificent book a specimen similar to mine, with this notice of it by the author, on page 99: "I have still to mention a number of stone implements, the use of which is unknown to me, * * * * *; second, a singular object consisting of a thin slab of black slate, and presenting the appearance shown (by the Fig. named). My collection contains only one such implement, but among the objects in Wetherill's possession I saw several. They are all exactly the same shape and of almost the same size. I cannot say in what manner this slab of slate was employed. Perhaps it is a last for the plaiting of sandals or the cutting of moccasins. In size it corresponds pretty nearly to the foot of an adult."

We can understand the utility of a last in making moccasins, but how such a model could be required or utilized in weaving a simple flat mat is not at first glance quite apparent. Supposing, however, that the implement was designed for this purpose, my theory of its manipulation in sandal making is this: A long strand of the yucca fiber was first wrapped around the stone from one

end to the other at intervals of half or three-quarters of an inch. This preliminary step served as a basis for securing the intertexture of prepared material, as the stone served as a guide for shaping the form.

Upon these transverse filaments the work was commenced and prosecuted, first on one side of the so-called last and then on the other, by the "over and under" method of broad plaiting. When this process of interweaving the damp and flexible strands had been conducted sufficiently far on both sides of the model to fix by it the shape and dimensions of the sandals they probably

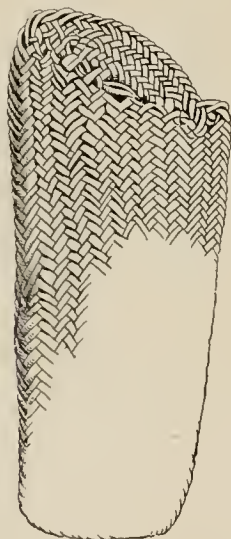


FIG. 2.

were cut apart and finished separately. Or, perhaps they were completed on the stone and left on it until quite dry before being cut apart. By this method the pair were as nearly alike as practicable, and being reversed were "right and lefts," adapted for each foot respectively.

Sandals of various kinds have been found in the cliff dwellings differing in texture, form and material. A common variety were made of untanned buffalo or elk hide with the hair intact on the upper surface on which the foot rested. The yucca plant furnished the staple for nearly all the others.

Some were coarsely made of twisted shreds of the leaf, and many, of neater structure, were wrought of the split fibres of more or less fineness. The prevailing shape of all, with the exception of those first described, was simply an ovoid, sometimes slightly modified, corresponding with the outlines of the foot only in length and breadth. The peculiarly curved front end with its square offset, of the more finely woven specimens, shown in Fig. 2, requiring a stone pattern for their fabrication, may perhaps be interpreted as a development of the esthetic in the progressive culture of those ancient tenants of the cliffs and caves.

J. F. SNYDER.

The eighth annual meeting of The Museums Association will take place at Oxford, England, beginning on the evening of July 6, and continuing until July 9. Besides the sessions for the reading of papers relating to museum methods, much attention will be given to inspecting the several museums of Oxford.

Among the papers presented at the last meeting were several of deep interest to museum workers. "How May Museums Best Retard the Advance of Science," by F. A. Bather, of the British Museum, was a most stinging thrust at the many bad methods lingering with libraries and other educational institutions, as well as museums. "Illustrated lectures in Art Galleries and Museums" was the subject presented by Thomas Rennie. Thomas white spoke of "The Lighting of Museums," which is a subject of vital interest to all museum workers.

H. I. S.

Morris K. Jessup, President of the American Museum of Natural History in New York, has given \$6000, according to press dispatches, towards an expedition which is to visit the northern continent of America, British Columbia, Alaska, Asia, Siberia and China.

COPPER IMPLEMENTS

Copper relics, unlike those of stone, being more sectional in their distribution, have not been as extensively sought after and studied as the more numerous articles of stone. It is true that occasional finds have been made in sections widely distributed, but the main source of copper relics of utility is closely confined to the eastern half of Wisconsin. Many fine implements have been recovered from northern and western Michigan, northern Minnesota, northern Illinois and eastern Iowa, but the great bulk of these implements has been secured from three or four tiers of counties closely bordering on Lake Michigan, in Wisconsin. The chief characteristic of copper relics from this section is their construction for the purposes of utility and the articles for ornamentation found in more southern localities are strangely wanting. It is this fact and the abundant supply which will naturally lead an investigator to the conclusion that at some remote period, how far remote it is impossible to state, a people inhabited this section who used copper in its native state extensively for economic purposes. Yet if a careful seeker after the truth cares to pursue the subject, he is naturally led to the published accounts of the patient and exhaustive researches of the eminent scientists connected with the great public institutions of our country. After viewing the silent evidence of thousands of copper relics, he seeks the reports of the Smithsonian Institution and the National Museum, only to be disappointed. He has either been mistaken in his conjectures or the subject has not been properly treated in these works, and he is led to the more enthusiastic records of other eminent writers, whose researches have not been as careful and whose works have been written for the literary market, and the writers have not lost sight of the fact that a little mysteriousness and an allegorical vein would not injure the popularity of their works.

At the present time it must be admitted that there is a general impression among the most scientific writers that no great age

can be ascribed to copper relics and that the source of supply was probably European to a great extent.

Mr. W. H. Holmes cites impressions of ancient fabrics preserved on copper implements in the thirteenth annual report of the Bureau of Ethnology. In the same volume Mr. Gerard Fowke makes the statement on page 165, that nearly every article of copper seems to have been ornamental in character. Colonel Garrick Mallory, in the tenth annual report of the Bureau, on page 212, writes as follows: "That virgin copper was used for diverse purposes, generally ornamental, by the North American Indians, is now established."

Professor Cyrus Thomas, in his exhaustive treatise on mound exploration in the twelfth annual report of the Bureau, after citing the recovery of a large number of copper relics from mounds explored, affirms that a careful inspection of these relics lead to the conclusion that most of them were made from sheet copper, and he does not describe to them any very extensive use among the ancient inhabitants of America. Although the National Museum possess a large and varied collection of Wisconsin coppers, mostly acquired from the extensive accumulations in this field, of Mr. F. S. Perkins, of Burlington, Wis., in the report for the year 1888 we find the subject dismissed in this wise: "The remarks concerning the fraudulent character of some specimens sought to be foisted upon museums and collectors, and the necessity for the greatest care concerning the preservation of proofs of their genuineness, apply with even greater force to copper implements than to those of stone." This meagre treatment accorded the relics of copper is disappointing to one who has made a study of the coppers on the ground where found.

It was not until 1871 that the fact began to dawn on archaeologists that there were copper relics to be found. In that year the veteran collector in this line, Mr. F. S. Perkins, found his first copper. His enthusiasm for relics of stone was replaced by that for copper relics. In his exten-

sive searches for these implements he gathered no less than 1300 of them and these in but a few counties. Nearly all were obtained from the finders direct. Previous to 1870 but few coppers had been found, the National Museum containing only seven at that time. Since then the various collectors in the United States have added to their possessions until the articles of this class are numbered by thousands. There are private collections of copper implements containing hundreds of specimens. I believe that copper implements are now found in greater abundance than ever before, and is it not significant that the later finds, those which were more deeply imbedded in the soil and last to appear, are of copper? It is a common occurrence for a copper implement to be picked up in a field that has been under cultivation for fifty years. This applies to surface finds; those implements which are seldom found in graves. Mounds and earthworks are not numerous in the section where coppers are most abundant. In fact, they are almost unknown in the counties of Washington, Fond du Lac, Sheboygan, Calumet, Manitowoc, Winnebago, Waupaca, Outagamie, Brown, Kewaunee and Door, in Wisconsin, which are situated in the heart of the copper implement field. In these counties articles of sheet copper are almost unknown. Probably not one per cent. could be considered as coming under this class. It is equally significant that at least ninety-eight per cent. of the implements found in these counties are strictly articles of utility, such as fish hooks, awls and needles, many of the latter with eyes, arrows, spears, knives, chisels, axes, spuds, etc. Many of these implements are massive in construction, especially the chisels, gouges and axes, weighing from one to six pounds, and beautifully wrought. A singular fact regarding the shapes is the lack of the usual forms found in stone. This is especially true of axes. The grooved stone axe is common to the section, but there is but a

single grooved, copper axe in existence, so far as the writer has been able to ascertain. The spears, of which there are several forms, do not resemble those of stone, being as a rule longer, generally ribbed on one side and flat on the other. Although there was evidently several modes of attachment to the shaft, they lack the notched base peculiar to stone. About two-thirds of them were fitted with sockets into which the shaft was thrust. These are further divided into two forms, those which are ribbed on the back and possessing no rivet for fastening the shaft, and those possessing a rivet and which are never ribbed. The presence of the rivet is made manifest by the hole which is found in the socket of these spears. The writer has one in his possession with the rivet still in place. The ribbed spears are the most numerous. Of the spears which do not possess the socket, and which constitute about one-third of the whole, there are several forms, all terminating in a tapering shoulder or spike for thrusting into the shaft. They are not usually ribbed. The knives are also found in both these forms, but the order of numbers is reversed and most of them have the spike for thrusting into the shaft, while a small percentage possess the socket. The fish hooks are bent in much the same forms in use today, but lack the barb. They are often grooved at the end for tying the line. The awls are round and also flat. Some of them possess an eye and they are fine specimens of workmanship. This class of implements seems unlimited in size, and undoubtedly represents implements intended for widely different uses. They are found from the tiniest implement scarcely one inch in length, to large bars three feet long and one inch in diameter. Axes, with one exception mentioned above, are celt like, with flaring bit. The chisels are among the most beautiful forms. They are generally long and slender, from four to fourteen inches in length, generally ribbed on one side and convex on the other. There are other curious forms and many peculiarities about these coppers, mention of which must be omitted in this paper.

There seems to be an utter want of evidence of the use of these articles of copper by the aborigines, within historic times. The records left by La Salle, Charlevoix, Hennepin, Allouez and other explorers, all cite the use of stone and bone in the making of arrows and spears, and no tradition existed at the time of their visits among the Indians of their ancestors having worked the ancient copper mines at Lake Superior. In fact, the statement is distinctly made that copper was held in veneration and fear. The working of the ancient mines has been too well established to warrant contradiction, but by whom or at what time is a question shrouded as much in mystery now as when first noticed.

It is not my purpose to claim a superior and advanced race as occupying this section in pre-Columbian times, and living in a copper age. Nor am I ready to accept the theory held by many patient searchers for the truth that many of these tools were cast in moulds. The frequent occurrence of nodules of silver ore would naturally lead one away from this conclusion. The presence of these silver nodules in the copper also proclaims its source as being the Lake Superior region, for in that section only is native copper found blotched with silver. The unfinished implements, of which there are several, also strengthen a belief in the cold welding process. Masses or chunks of native copper, weighing from a few ounces to a hundred pounds or more, are very commonly found in Wisconsin. While some of these may have been carried down from the north in the glacial drift, some no doubt were brought from the mines to be worked into finished implements. These rough masses may have been stored away as raw material similar to the caches of flint disks so commonly found.

That a people existed at some remote period in this section whose center of pop-

ulation is represented by eastern Wisconsin, who used copper articles of utility and of ornament to a limited degree only, is established by the indisputable evidence of the articles themselves, mostly surface finds, it is true. While the graves of more southern districts may show a preponderance of articles for ornament, the fact must be taken into consideration that the contents of graves, as a general rule, are not a true guide to the economic life of a people. If our race were annihilated and forgotten and we were followed by another people, an examination of our graves would disclose articles of gold almost exclusively and for ornamental purposes, and few articles of iron or other metals would be found. The conclusion might be reached that we never used iron extensively. The true evidence of the existence of an iron age would be found on the sites of our villages and workshops.

In a careful examination of a large assortment of copper implements numbering many hundreds, gathered from the farms of eastern Wisconsin, I find about ninety-eight per cent. constructed for utility, and two per cent. for ornamental purposes. Fish hooks constitute about ten per cent.; awls and needles in various forms and sizes, 37 per cent.; spears, 30 per cent.; chisels, five per cent.; knives, eight per cent., axes, three per cent.; spuds, one per cent.; various bent and odd shapes, four per cent. I believe this proportion will hold pretty true for all the thousands of implements in copper recovered in the district mentioned. Thousands of implements are yet to be found, but it is doubtful if further light will ever be thrown on the subject to relieve the mysteriousness which surrounds them. They come to light from their earthly bed green, rust eaten and reduced in size by corrosion, but they shed no light on their past history. Many of them have already been entirely reduced and have left but a greenish blotch in the brown earth, and the ashes of the dead mingle with the ashes of their handiwork, and the problem of their existence is in the keeping of the Creator, where the ken of man reacheth not.

H. P. HAMILTON.

 EDITORIAL.

We regret that Mr. C. C. Clay, in his interesting sketch entitled, "Fortification in Missouri," to be found on another page, has not been more explicit in stating the exact location of the defensive earthworks he mentioned more definite in narrating the historical events that, in his opinion, were associated with them.

We are at a loss to identify that passage of Missouri's early history where a party entrenched behind earthworks were massacred to a man by the Indians. In the only wholesale massacre, of the kind he mentions, on the frontier of that state that we can now recall, the exterminated party was without fortifications or protection of any description. The instance we refer to was that of a band of Spanish invaders under the command of Captain Villazur, who, at the time, was Commandant of the Presidio of Santa Fe, in New Mexico.

War was declared between Spain and France in 1719, and early in the spring of the next year Villazur, with a large body of armed men and a retinue of women, servants, camp followers and two priests who officiated as army chaplains, left Santa Fe with the purpose of striking the French colonies in the Illinois country a decisive blow. They reached the Western border of the present State of Missouri in good condition and high spirits and went into camp on the banks of a river; but, if they fortified their camp we can find no account of it. While resting there they fell into the fatal mistake of forming an alliance with the surrounding Indians under the impression that their new-found allies were enemies of the French. The wily savages encouraged this error; perhaps had deliberately concocted this deception to more effectually lure the invaders into their power, until at an opportune moment they fell upon the unsuspecting Spaniards and killed all but one of the priests who finally returned to Santa Fe in safety. The Indians afterward made their appearance in the French settlements on the Mississippi with Spanish arms and accoutrements, priestly vestments and other trophies of their treachery.

There are extant four different accounts of this expedition and its disastrous termination, differing somewhat in detail, but substantially agreeing on all important points. From neither of them, however, can we learn with any degree of certainty the exact locality of the massacre; or the identity of the murderous savages. They are thought by some historians to have been the Osages; but more probably were the Missouris. There are reasons for the belief that the event occurred at the headwaters of the Osage river about the junction of its two main branches; but the preponderance of evidence places it on the Missouri river in the vicinity of the present situation of Kansas City.

These mooted questions are, perhaps, now beyond all possibility of solution. The geography of the trans-Mississippi region was at that time so chaotic, and the Indian tribes so unstable and nomadic, that many local names of that era have long since faded away. Yet, it may be that further investigation of the embankments described by Mr. Clay may reveal heretofore unknown data of historical value.

J. F. S.

Professor Warren K. Moorehead, whose health has been for some time impaired, has, on the advice of his physicians, gone to New Mexico for the benefit of its climate and pure air. We hope the pulmonary trouble of which he is apprehensive, may not be serious, and that the change of residence will soon restore him to vigorous health and prolonged usefulness.

 THE RED MAN OF TO-DAY.

The Rev. George H. Gutterson, of Boston, district secretary for New England of the American Missionary Association, has just finished an investigation of the facts concerning Indians in the United States. As an indication of the present standing of the red man the facts are interesting.

Indians are now found in every state and territory of the Union, their total number, according to Mr. Gutterson, being 236,041 and the number of tribes 50. This total includes 58,806 "civilized" Indians, as those who live neither on reservations nor in tribal relations are called, but it does not

take into account 23,531 Indians in Alaska, where they form 73.42 per cent. of the population. Among the "uncivilized" Indians there are about 38,000 of school age, 23,393 of whom are enrolled in different educational institutions.

A large variety of occupations have been taken up by the Indians, some of them of the highest class. They are traders, clerks, engineers, physicians, trained nurses and clergymen. Many of them are mechanics, supporting themselves entirely by their trades. But the great majority of them are satisfied with occupations more readily taken up. They follow such callings as teaming, the growing of corn and hay, cattle and sheep farming, the selling of ginseng, fish, berries, wild rice, maple sugar and of bead work, moccasins, pottery, baskets, and similar things. The Indian women in many parts of the country make beautiful lace.

In 1896 there were 293 Indian schools, of which 223 were under government control.

Up to the last of November, 1895, 49,957 allotments of land had been made to Indians under the severalty bill. The total government appropriation for the Indians in 1897 is \$7,189,496.79.

A FOOLISH STORY DENIED.

In the March number of *The Antiquarian* we copied from the *Atlanta Constitution* an elaborate account of a recent extraordinary discovery made by Mr. W. C. Zimmerman, circuit clerk of Citrus county, Fla., while on a hunting expedition on one of the Bay Islands south of Fort Meyers, in that state. Digging into a low mound, he and party are reported to have unearthed several suits of steel armor, each containing a human skeleton, one iron box from which they took \$6,000 in Spanish doubloons, and another iron box containing the portrait of a beautiful woman and a letter written on parchment in Spanish from Columbus to Valasquez; and with these boxes and suits of armor sundry swords, blunderbusses, etc., of 16th century pattern.

To a note of inquiry regarding this marvelous story, written by the well-known archaeologist, Mr. Horatio N. Rust, of Pasadena, Cal., Mr. Zimmerman answers as follows:

"Inverness, Fla., March 23, 1897.

"H. N. Rust:

"Dear Sir—Replying to your inquiry I will say that the article in *The Antiquarian* to which you refer, that has been widely published in all the leading papers of the country, is a great exaggeration, based upon a mere thread of truth. I visited south Florida, as stated, and saw very much to interest a man who had read History and was fond of antiquities, but found no armor, gold, silver, precious stones or jewels.

"Respectfully, etc.,

"W. C. ZIMMERMAN."

The thirtieth 1895-96 report of the Peabody Museum, of Harvard University, to the President of the University, has been issued by Professor Frederick W. Putnam, Curator of the Museum. In spite of the financial depression the work of the Museum has progressed. The need for men properly trained for educational museum work is emphasized. The collections received from the several expeditions of the Museum to Copan, Honduras, have been catalogued and comprise 1400 entries.

The Hemenway collection from the Pueblos of the southwest has been installed in the Museum and is now on public exhibition.

The field work of the Museum has not been as extensive as in some former years, but work of value has been in progress. Mr. Volk has continued his investigations in the vicinity of Trenton, N. J. Mr. Wiloughby made researches at the prehistoric sites and quarries of Mount Kineo, Maine, and Mr. Gordon made a general archaeological trip in Guatemala and Honduras.

The Museum has published as No. 1 of a series of quarto memoirs, a preliminary report on the work at Copan, which was prosecuted by Mr. Saville, Mr. Owens and Mr. Gordon. A map of the ruins and eight plates accompany the report.

The instruction given in the Museum has continued, there being eight students at work, four of whom are engaged in special research. In this work Mr. Frank Russell assists the curator, taking charge of the introductory work formerly conducted by Dr. George A. Dorsey, who was call-

ed to the Field Columbian Museum, of Chicago.

H. I. S

The New York Academy of Sciences held its fourth annual reception and exhibit of recent progress in science in the American Museum of Natural History, April 5 and 6, 1897. Ethnology and archaeology was in charge of Franz Boas and M. H. Saville, and included nineteen exhibits among which may be mentioned the following:

1. Skeletons as found in a burial mound near Mays Lick, Mason county, Ky. Collected and prepared by Harlan I. Smith.

2. Model of an altar mound containing human burials, North Fork works near Chillicothe, O. Modelled by Harlan I. Smith.

Nos. 1 and 2 were from the collections of the American Museum of Natural History.

3. Archaeological specimens from New York City. Collected and exhibited by W. L. Calver.

4. Codex Vaticanus, No. 3773. Chromo-photographic reproduction of the celebrated pre-Columbian Mexican Manuscript preserved in the Vatican Library, Rome, published in 1896 by the Duke of Loubat. Exhibited by M. H. Saville.

8. Photographs and plan of a recently discovered Aztec temple near Tepoztlan, State of Morelos, Mexico. Explorations of Francisco Rodriguez and M. H. Saville.

9. Prehistoric Inca garments of ancient Peru, from graves near Lake Titicaca.

10. Shell, bead and feather work of ancient Peru, from ruins of Gran Chimú.

11. Busts of Kwakiutl Indians, Vancouver Island. Modeled by Mr. Kasper Mayer.

Nos. 9, 10 and 11 are from the collections of the American Museum of Natural History.

14. Collection of implements from the Eskimo of Southampton Island. Exhibited by Captains Geo. Conner and Th. Luce.

15. Games of the Eskimo of Smith Sound. Collected by Lieut. R. E. Perry. From the collections of the American Museum of Natural History.

16. Divinatory diagrams. From the collections of the Museum of Archaeology, University of Pennsylvania. Exhibited by Mr. Stewart Culin.

17. Rock painting from British Columbia. Exhibited by Mr. James Teit. H. I. S.

BOOK REVIEWS.

The Water Resources of Illinois, by Frank Leverett, Washington, 1896.

This valuable geological treatise on a branch of that science of vital importance to the people of Illinois, is an extract from part second on Economic Geology and Hydrography, of the seventeenth annual report of the United States Geological Survey for 1895-96. Its author has been for some years one of the assistant United States Geologists, and is a young gentleman of fine attainments who has made a specialty of superficial Geology, and has mastered all the intricacies of the stratas, formations and deposits of the Tertiary and Quaternary eras in the Mississippi valley. His studies on the glacial phenomena and their effects and remains, have been exhaustive. In this local report on Illinois, illustrated with several diagrams and colored charts, he reviews the physical features of the state, giving a table of its altitudes; describes its topography as influenced by the Drift; its drainage basins; the regimen and measurements of its streams; its geological construction from the surface down to the azoic rocks; and discusses all possible sources of water supply, artesian wells, rain falls and water analyses.

He deals very sparingly in theories, but presents facts that will attract general attention in Illinois, and prove of great service to her citizens in their efforts to counteract protracted drouths and maintain their gradually subsiding store of surface water.

Two Ruins Recently Discovered in the Red Rock Country, Arizona. Pacific Coast Shells from Prehistoric Tusayan Pueblos. Tusayan Totemic Signatures. The Miconinovi Flute Alters. The Prehistoric Culture of Tusayan.

These monographs by the eminent Anthropologist, J. Walter Fewkes, are reprints from the Journal of American Folk-Lore and The American Anthropologist. The one first named is written in pleasant, narrative style, giving an interesting and instructive account of the geology and gen-

eral features of the country between the Verde valley north of Oak creek and Flagstaff, Arizona; and a comprehensive description of two cave houses not before explored in the Red Rock cliffs overlooking Oak creek, a tributary of the Verde. We have, in the last dozen years, had so many descriptions of the cliff eyries of by-gone cave-dwelling Pueblos as to render them quite familiar to us. But the refined and accurate observations of this author; his clear diction and intimate knowledge of our southwestern antiquities and culture of the present Pueblos and their ancient kinsmen, with his discerning conclusions, invest this descriptive report of the Palatki and Honanki with all the charm of novelty and worth of a valued, original contribution to our archaic history.

The subjects treated in the other pamphlets are results of his extended investigations and exhaustive studies of Pueblo history, mythology, arts and traditions. The prehistoric ornaments of marine shells found in Tusayan are mute witnesses of intercourse between the primitive Arizona people and the Pacific coast, and may indicate their point of first ingress to that region. Dr. Nordenskiöld thinks the Pueblos "were nomadic Indians whose culture had been considerably modified and in certain respects elevated by altered conditions of life; and that the evolution of this culture had nothing in common with the ancient, Mexican civilization." This, however, is yet an open question; and Mr. Fewkes justly remarks that "Archaeology is piteously weak in information in regard to the prehistoric character of the Pueblos;" and believes "there is no field of American Archaeology which will reward the serious student with more interesting discoveries than scientific exploration of the ruins of our southwest.

Mrs. Mary A. Sagatoo, of Saganing, Arenac county, Michigan, has now in press a book on the customs of the Ojibwa Indians before they were Christianized. Mrs. Sagatoo has labored among these Indians over 34 years and includes in her book some of her personal experiences.

The American Anthropologist, Washington City, March, 1897.

This periodical, now published monthly, under the auspices of the Anthropological Society of Washington City, is a pamphlet of thirty pages, devoted to the interests of the society named, and to the higher aspects of its special science. A very learned and interesting paper on "The Language Used in Talking to Domestic Animals," by H. Carrington Bolton, occupies the entire space of the March number with the addition of a page or two of archaeological and bibliographical notes. It is a publication of rare value to students of this science.

CORRESPONDENCE.

Joliet, April 16, 1897.

Editor of Antiquarian:

Dear Sir—In the article on "Relics of the Manhattan Indians" in the April Antiquarian mention is made of pipes marked "R. Tippet." These clay pipes, the writer says, have been found on Manhattan Island, in northern New York (Indian graves), and in Montgomery county, N. Y. As an indication of the age and origin of these pipes it may be of interest to state that I have found the "R. Tippet" pipes in the Acadian cellars in Nova Scotia. From the position in which they were found I conclude that they fell from the wall when the house was burned, thus verifying Longfellow's line: "Take from the shelf overhead thy pipe and the box of tobacco."

Acadia was settled between 1604 and 1607. The exile of the Acadians took place in September, 1755. I have endeavored to locate this "R. Tippet" as to country and date, but have failed thus far.

I have naturally supposed the pipes to be French, but the Manhattan find does not support the supposition, although those in northern and central New York may have come from the French.

F. M. MUHLIG.

Editor Antiquarian:

The article upon an "Indian Plane," by Dr. J. F. Snyder in the March number of The Antiquarian, interests me, as I have figured a very similar tool for an article on Prehistoric Archaeology of the Tunxis Val-

ley, Conn., for the April Connecticut Quarterly. I found the tool at Plainville, Conn., and always considered it to be a polisher. I have two other tools that I will describe to you, which seem to be unique. One is of light yellow horn stone, and came to me from Oregon. One face is nearly flat, like a flaked knife, the other worked all around, and thickest in the center, convex, like a turtle back. The base is like an ordinary notched arrow point. One side of the blade is nearly straight and only poorly worked. But the other sweeps around about one-quarter of a symmetrical oval. The chipping is all done from the convex side down to the flat face at a sharp bevel. When the flat face is laid upon a green sprout of soft wood and pushed forward against the curve, it will cut the bark and soft wood the same as a draw shave, for which purpose I think it was made.

The second tool is one of shell-Venus (sp.) probably mercenaria that I found where a shell mound had been plowed down for an orange grove on old Tampa Bay, Fla.

This second tool belongs to the same order and must have been used for much the same purpose. A good variety of tools, spoons, gouges and arrow points came from the same place.

This clam shell has a semi-lunar cutting notch, bevelled the same way from the round side of the shell to the smooth inner face. The cutting edge in both tools is exactly on a line with the flat face. When used in the manner above described it cuts the bark of soft sprouts and seeds and bamboos. Clam shells in this section grow very large. I weighed living clams that tipped the scale at eight pounds.

On upper face of first the shaded mark shows where the tool has been worn smooth by use.

On No. 2 the ridges on the inner face. The shell is just one-quarter inch thick. So far as I know these tools are undescribed. I can vouch for the clam shell, for I found it personally.

Very truly yours,

F. H. WILLIAMS.

Bristol, Conn.

FORTIFICATIONS IN MISSOURI.

Mr. C. C. Clay writes the Antiquarian about a bit of Indian history which is corroborated by numerous surface finds:

"It gives me pleasure to write The Antiquarian in a short way some of the facts in reference to relics from an old wood pasture, recently plowed up, in a mould scarcely four inches deep. The matter has been, and is, of great interest to me.

"This find tallies very well with an event which happened in the year 1719, the result of which has made it possible for our fair homes to be under the Stars and Stripes in the good State of Missouri. So I will write and talk as though the facts are conceded.

"Had the Spaniards been successful in their colonizing effort, Spain or Mexico would probably be ruling this domain today. On the other hand, it seems that there ought not to be an event so important, so dreadful, as the wiping out of 1,500 men, women and children without a notice of the facts in the current histories and a detailed account of the same in the library of our State.

"A few years ago I spent a Sabbath at Malta Bend, Mo.; after reading myself tired, I wandered out on the bluffs of the river in company with Mr. J. A. Tobin. We came upon the slight, but plain outline of an old earthwork."

He says that the works can be traced for a total length of about 520 yards; that the ditch is on the outside and not within, as is the case with aboriginal works. Near the south end of the enclosure are depressions, or rifle pits, about which were found gun barrels, locks, flints, axes, hoes, kettles, scraps of iron and copper. People of the neighborhood estimate that a wagonload of this material has been carried away. Also some stone troughs for grinding wheat and corn, one or two women's bracelets and some finger rings were discovered. The slight line of the works is comparable with those which the soldiers made during the late civil war when going into camp. Some of the pits or caves used by the families as protection against storm or cold were nearly six feet in depth. There seems to have been but little system in the disposition of the camp and practically no order in arrange-

ment. Two hundred yards beyond the camp extends the river bluff. At the foot of this bluff is a good spring of water. Walnut, oak and other trees grow to the east of the spring ravine, making the camp a beautiful spot and admirable for every purpose except defense.

Mr. Clay thinks the attack to have been made from the south, the enemy having taken advantage of the trees and tall grass. In his opinion, they entirely surrounded the work and cut off the water supply, compelling surrender in a few days.

An engineer from Spain, a man of some note, was the commander. His camp had been occupied long enough to prepare winter quarters. After the surrender, such kettles, hoes, etc., as could not be carried off by the savages, were destroyed. The priest was saved alive.

The historic accounts published in Appleton's Encyclopedia mention a grant of 200 muskets to appease the Indians.

A MISTAKE.

About two years ago, I received from a lady, widow of a collector of archaeological curios, an offer to sell to me an object which she assured me was the largest stone arrow-head that was ever known; and that it was a grand ceremonial stone, which had been carried by a great Indian chief, as a badge of authority, in the tribal processions, etc.; and it was exceedingly valuable. On securing a tracing, and a description, I found it to be an ordinary stone spade, of bluish flint, and probably found in Saint Clair county, Illinois. Two or three dollars would have been a good price for it. Someone had been deceiving either the lady or some other persons from whom she received her opinions of the stone; or else someone who did not know much about such implements had allowed his imagination too much exercise. Possibly it might be useful to guard beginners against such mistakes.

E. C. MITCHELL.

St. Paul, Minn., March 16, 1897.

RECENT DISCOVERIES.

The Ohio State Archaeological and Historical Society, with its usual energy, has entered upon its field work for this season. Monday, April 12, we began work in Pickaway County and had the good fortune to make a discovery which will add to the fame of the Ohio society as prime movers in the work of enlightening our people in the prehistoric history of the state.

The group upon which we have been at work for the past week is located on the farm of Mr. Dildine Snyder, near East Ringgold, in Pickaway county. This group is situated upon a hill over 150 feet in height, and consists of a stone mound, a circle, half stone and half clay, and a clay mound, the circle forming the connecting link between the stone mound on the west and the earth mound on the east. The stone mound is 12 feet high and 125 feet in diameter, the circle is 110 feet in diameter, the clay mound 105 feet in diameter. About 20 feet east of the group is another circle 150 feet in diameter. Within the wall is a ditch which surrounds a large platform, about 3 feet lower than the outer bank, and perfectly level on the surface. The hill curves around, hiding part of the view. On the other bank, about 200 yards east of this circle, is another clay mound 12 feet high and 130 feet in diameter. North of this mound is a third circle 150 feet in diameter. This circle and mound are generally considered part of the "Snake Den" group, though they do not really belong to it.

We commenced work first on the earth mound; running a trench from east to west, 10 feet in width. We dug in about 25 feet, making an excavation about 20 feet square, and on the bottom found eight skeletons, one child and seven adults. With the child's skeleton was found a handsome bone awl and a small piece of graphite. A piece of pottery and some flint knives and disks were found with the other bones.

Leaving the earth mound, I started two men on the circle, one on the west side and one on the south. After some digging on the south side a layer of large flat



(Copyright, 1897.)

Two-thirds original size.

stones was removed, below which the workmen found some half-dozen concretions or geodes. The entire exploring force was then put to work on the south part of the circle, unearthing 55 concretions, ranging in size from that of a common marble to specimens a foot in diameter, in weight from half an ounce to 75 pounds. The largest concretions were found toward the north. With the concretions were found 47 fossils of the variety commonly known as "cow horn;" two septaria, three fossil plants, one piece of granite, a specimen of quartz crystal and 50 peculiar formations. Among these geological specimens Dr. Orton pointed out 12 different species of fossil coral.

With these specimens were found the following relics of the mound builders: Six hammers, 5 pestles, 1 tube pipe, 1 unfinished pipe, 1 large stone bead, 1 shell bead, 3 paint grinders, 10 round paint grinders or plumb bobs, 1 stone punch or awl, and 1 unfinished effigy. In the southern part of the collection of relics I found the most interesting and important relic in all this valuable discovery. In a peculiar mussel-shell-shaped box of stone, $3\frac{1}{2}$ inches in length and 3 inches in width, protected by a separate stone cover of similar form, were five nuggets of silver. Three of the latter were coated with some sort of a black paint, while the other two were covered with pink ochre. So far as is

known this is the only nugget silver ever found in a burial.

After the deposit of geological and archaeological specimens was uncovered, a box 2 feet long by 18 inches wide, formed of large flat stones, like the first layer, was discovered. Within this box were the remains of a cremated skeleton—some burnt bones and perhaps a shovelful of ashes—all that remained of what must have been a great chief among the mound-builders. As Dr. Orton laughingly said, judging from his burial, he must have been a great prehistoric geologist.

It was a remarkable fact that the earth in the burial showed no sign whatever of any action by fire, from which we were forced to conclude that the body was cremated before burial. This conclusion is well borne out by further explorations now being made of what appears to be a large stone crematory within the circle on the west side. We made an excavation about 2 feet wide by 4 feet deep and 5 feet long and found the stones burned red and crumbled, evidently from the action of intense and long continued heat.

Too much importance cannot be attached to the value of this unique discovery, which is certainly as astonishing as it is mysterious. The nuggets and box weigh $15\frac{3}{4}$ oz., the box weighing $9\frac{1}{2}$ oz. and the silver $6\frac{1}{4}$ oz. The largest piece of silver weighed 2 oz.

CLARENCE LOVEBERRY.

THE ANTIQUARIAN.

EDITORIAL STAFF: DR. J. F. SNYDER, Editor-in-Chief, Virginia, Ill.; DR. CLARENCE LOVEBERRY, Columbus, O.; HARLAN I. SMITH, of American Museum Natural History, Associates.

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A CACHE OF IDOLS AND CHIPPED FLINT INSTRUMENTS IN TENNESSEE.

When an acquaintance of the writer visited the rooms of the Missouri Historical Society, at St. Louis, and gave the information that during a trip through Tennessee he had seen at a farm-house a number of long, flint "spikes," "that long," holding up his umbrella, I concluded at once that it was another case where the bigness of an object becomes wonderfully stretched by imagination. Who among collectors has not had the experience of going miles after an object that was described as so and so, when in reality it had grown considerably with the mention of the find from one to another. The information was forgotten almost as soon as given, but when a few months later there was received a photograph, made to a scale, and showing the superabundance of the objects, no time was lost in making a personal investigation and securing the objects for the Society's collections.

On the banks of the beautiful Duck river, Humphreys county, Tennessee, near Painted Rock, on the farm of Mr. Banks Links, are the remains of an extensive, ancient, stone-grave cemetery, which at one time contained hundreds upon hundreds of stone cists. The land having been in cultivation for many years, wagon-loads of flat rocks used in building the graves have been carted off and the human remains scattered; innumerable objects of prehistoric art have been turned up by the plow and are now among the collections of the Ohio valley.

In December, 1894, an employe of Mr. Links, while plowing in this field, turned up several implements. Their form and size being unusual, time was taken to dig,

and the objects, as shown in the accompanying illustration were found. According to the words of the finder, they were simply "in a bunch;" nothing unusual in the manner of the deposit was noted. The find was talked of and commented upon for several months. The precise spot having been carefully noted, further digging was done in the following March. At a depth of a foot or two below where the flint objects had been deposited, the two Images or Idols, Figs. 1 and 2, were found. Whether the deposit had been associated with human remains, it was impossible to determine. From appearances and accounts of the discovery, the images were placed in the ground side by side, in an upright position, the flints in a compact "bunch" immediately above. On all sides were remains of graves, but so many of these graves having been disturbed and the stones removed in cultivation, that with certainty it cannot be said that the find was a deposit with the dead, although the writer inclines to the opinion that they were and that the stone cist lay immediately above the cache of objects. The Images represent a male and female. "Adam and Eve," they were christened by the finders. Both are fashioned out of a soft rock and what is locally known as Claystone (soft limestone), of a yellowish color and coarse texture.

Unfortunately, the Idols had passed into the hands of a speculator and could not be secured, except at an exorbitant price. This general description is therefore from memory, although having handled them and obtained photographs.

A comparison of these two images with many others found in various parts of Ten-



nessee and the south, show the same general characteristics peculiar to all.

Fig. 1. The female is about 24 inches high and weighs probably 50 pounds.

Fig. 2. The male is about 30 inches in height; weight probably 80 pounds.

Figs. 1 and 2 both show side views of the images, the female in a kneeling posture with both arms down and hands clasping the knees; the male in a half kneeling or squatting position, the right limb drawn up to the body on a line with the shoulder, the right arm resting thereon, the left limb under the body and left arm and hand clasping the knee similar to that of Fig. 1. Although rude and somewhat clumsy, the workmanship is better than usual in sculptures of this class, the form of the body in both being exceptionally well modeled and all features, especially about the head, very bold and clear.

The hair on the female is drawn closely behind the ears, terminating by a peculiar paddle-shaped fillet down the back; on the male the hair is shown by a well-defined ridge across the forehead, covering the ears, and cut square on a line with the neck. On either side of the head, just above the ears, the hair is shown drawn together in a circular knot, a feature frequently noted on terra-cotta images from Missouri and

Tennessee. The eyes of the male are very prominent, the reverse being the case in the female, where the eyes are designated by shallow, oval lines.

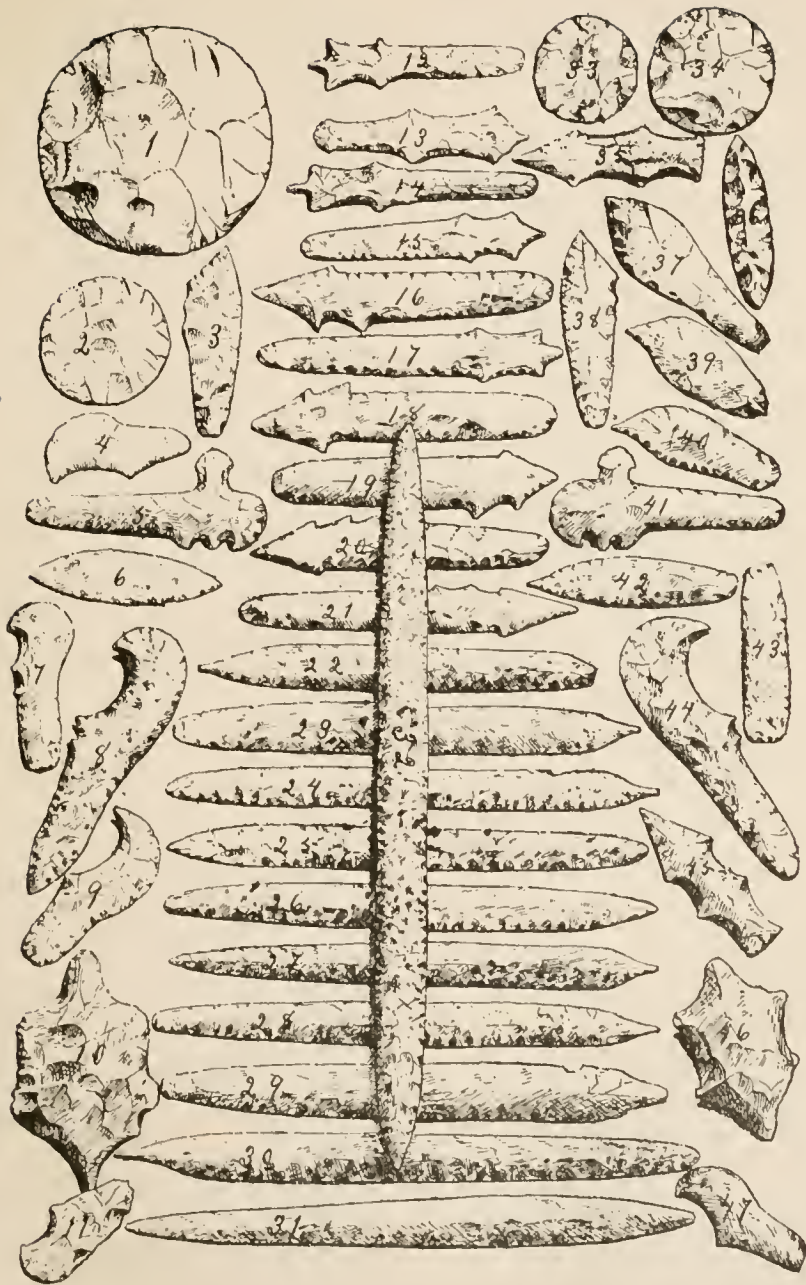
The mouth of the female is open, with thin, well-cut lips, while the male is shown with tightly closed mouth and exceptionally thick, protruding lips.

The remarkable series of 46 flint implements, Figs. 1 to 47, inclusive (Fig. 43 not belonging to the find), show almost all the rare forms of so-called ceremonial flints and tokens which have been found in the Tennessee river valley and which seem to be unknown in neighboring localities, Fig. 32 being the longest and finest chipped flint in the world, as far as known.

With the exception of Figs. 3, 5, 37 and 41, similar forms have been found at various times in the same locality. With three or four exceptions, the objects are all of the same material—a dull grey or brownish color, cherty flint.

A remarkable and unexplainable feature of the find is, that with the exception of the long, slender, double-pointed specimens, all the forms, with one exception, are in pairs or two of each form.





Figs. 1 and 2; 3 and 38; 4 and 11; 5 and 41; 6 and 42; 8 and 44; 9 and 47; 10 and 46; 35 and 45; 39 and 40; 12 and 14; 13 and 15; 18 and 19; 20 and 21 are pairs.

Figs. 1, 2, 33 and 34 are almost true circles of flint, the larger measuring just 9 inches in diameter; the others 5, 4 1-2 and 4 inches. Fig. 1 is less than one and one-

half inches thick in the center, the others one-half inch, all tapering gradually from the center to a sharp rim or outer edge.

Figs. 3 and 38 are each 7 1-2 inches long, 2 inches deep, of oval-leaf form, with two deep circular notches or indentations on one edge, near the center line of the object.

Figs. 4 and 11 are odd hook shapes, Fig. 11 being very rude or possibly unfinished. Fig. 4 is very thin and delicately chipped, the handle (?) being entirely different from the other hook forms. The double reverse curve of the upper edge is unusual. These are 5 1-2 and 5 inches long, 2 1-2 inches wide at the widest part. Figs. 5 and 41 are certainly "Ceremonial," and by ceremonial one usually means that no more questions should be asked. The form seems unique and at once suggests a sort of medieval, European battle axe and war club combination. Both are exquisitely chipped and as near alike as two peas; the head being flat and considerably thinner than the handle, which is quite slender and rounded, the inference is drawn at once that they were used with the hand. The upper edge has an odd, flaring, axe-handle-like projection with a very keen edge, the lower edge three equally wicked and keen semi-circular projections and indentations. They measure respectively 8 3-4 and 9 inches in length. The handles are one inch thick, the blade, one-half inch at the center, gradually tapering to a sharp edge. Figs. 6 and 42 are in form like the long, oval-leaf shaped knives found throughout the United States. Fig. 6 is of a bright, yellow chert, each 7 and 8 inches in length.

Fig. 7 resembles the other hook forms, being, however, of a longer and narrower, thicker type, with two hooks or circular indentations, one of which is small; length, 6 1-2 inches. Figs. 8 and 44 are very large, beautifully hooked or sickle shape objects, each just 10 3-4 inches long, very symmetrical, and with the peculiarity of having a very deep notch, forming a double barb at the termination of the lower end of the hook or sickle curve. These are 2 3-4 inches wide at the upper portion, 3-4 of an inch thick.

Fig. 9 is a counterpart of Fig. 8, but smaller and without barbs or notch well

chipped, the sweep of the curve having an indentation of one and one-half inches; length, 6 3-4 inches.

The identity of Figs. 10 and 46 is well shown in the larger specimen. In the original objects the flat, under side, the oval or rounded back, the thick, tapering tail, the oval-pointed head and the four legs with notches or serrations imitating claws (which the artist fails to show in the drawing), at once illustrate to us the turtle. Among the many thousands of chipped objects that have come under the writer's notice, this is by far the finest example of flint chipping which he has seen; 8 3-4 inches long, 5 inches wide, 1 1-2 inches thick. The smaller one (Fig. 46), although ruder in form and workmanship, there is no mistaking its identity. It measures 6 3-4 by 4 inches.

Figs. 35 and 45, a dagger form with double barbs and handle, are exceptionally well made and symmetrical. General Thruston, in his *Antiquities of Tennessee*, page 234, says: "The joints on the sides doubtless had some significance in the system of tribal and family symbols, etc." and "that they were probably made to order by the old flint experts," etc. This fits! How else can we account for the many and almost indescribable forms and beauty of workmanship exhibited in these objects? Figs. 35 and 45 are each 7 and 7 1-2 inches in length; two inches wide across the barbs.

Fig. 37. A well-proportioned, paddle-shaped object, 8 3-4 inches in length, the lower end or handle being thick, gradually tapering to the point, less than 1-3 of an inch in thickness at the widest part.

Figs. 39 and 40. A pair having the oval-leaf shape outline with that part of the edge near the point concaved and deeply serrated. They are very thin, well chipped, 6 1-4 and 6 3-4 inches in length.

The five objects, Figs. 12, 13, 14, 15 and 17, are respectively 8, 8-1-4, 9, 9 1-2 and 11 3-4 inches in length.

*"The symmetry and beauty of the handle, the exact projections on opposite sides, the tapering forms and the evidently important place these rare objects must have held in the religious and social life of

* Thruston, *Antiquities of Tennessee*, page 240.

the old Tennesseans, all invest them with peculiar interest.

"Here we have, in all probability, the sceptres or royal maces once used by the magnates of the race that built the mounds and fortifications of middle Tennessee. They may have been the insignia of chieftainship or of the priesthood."

Figs. 16, 18, 19, 20 and 21 represent other forms of these sword and hook shaped objects, although the barbs on either edges suggest the harpoon.

Figs. 16, 18 and 19 each have one long slender barb projecting from one edge and two barbs immediately opposite. Figs. 20 and 21 have three barbs on each edge. The handle part of these is thick and rounded, gradually becoming thinner and tapering to a keen point. They are respectively 10 3-4, 11 1-2, 11 3-4 and 13 inches in length.

The oval, double-pointed "flints," Figs. 22 to 32, inclusive, are, as far as known, the finest examples of flint chipping that have been discovered in North America and, possibly, in the world. All are very thin, (none more than three-fourths of an inch, several scarcely one-third of an inch), and delicately formed—less than one and three-fourths inches in width and measuring in length 14 $\frac{3}{4}$, 17 $\frac{1}{2}$, 18 $\frac{1}{4}$, 18 $\frac{1}{4}$, 18 $\frac{1}{2}$, 19, 19, 21 $\frac{1}{4}$, 22 and 28 inches each.

The remarkable length of the objects would at once suggest coarseness, but the chipping is as remarkable as is the extreme length of the objects, the chippings showing the same delicacy of touch as on the smaller arrows and spears. The repeated quotation "that they were probably made to order by the old flint experts" is certainly not out of place.

To have gathered the objects singly here and there in a region wonderfully prolific in antiquities, would not have been of much moment. The significance of being deposited together and their uses, whether useless as weapons or too fragile for mechanical purposes, is a solution for another paper, perhaps by others.

WILLIAM J. SERVER.

St. Louis, May 10, 1897.

A CLASSIFICATION OF ARROW OR SPEAR-HEADS OR KNIVES.

Classifications of these implements have been attempted by various archaeologists, but none of them seem to have met with general approval or been adopted in common use. Some classifications were so minute in detail that it was impossible to remember the different names and forms. Others have attempted to follow the botanical nomenclature and adopt the names of leaf forms. The latter appears good in theory, but is impracticable and adds to the confusion. The writer has made an essay at classification which seems simple, compact, with divisions at once definite and easily understood, yet, taken together, they appear to cover the entire subject.

During the early prehistoric ages, these implements were all made of stone, and all except those of slate were chipped and not ground or polished. Some of the forms were perpetuated in historic times in bronze and iron. The practice of chipping these implements from stone instead of grinding or polishing them, continued throughout prehistoric even into historic times. The North American Indians, and indeed all modern savages using such implements, have always made them by chipping, and, with the exception of slate, never by grinding or polishing.

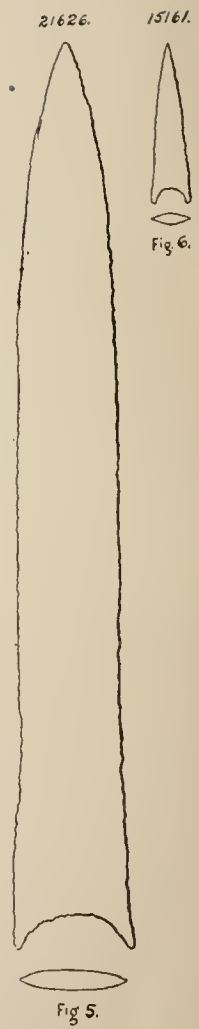
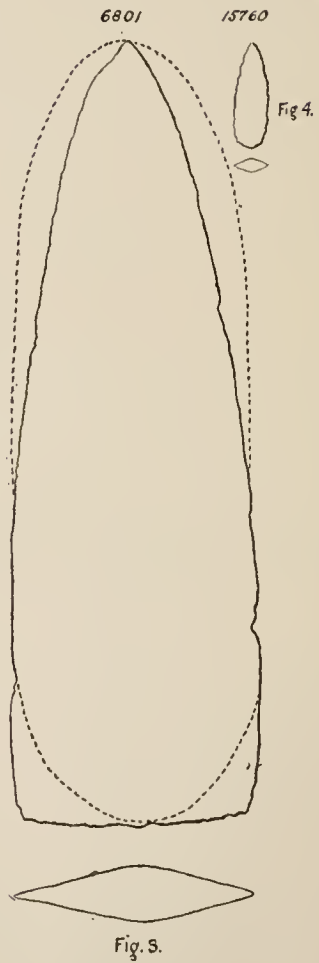
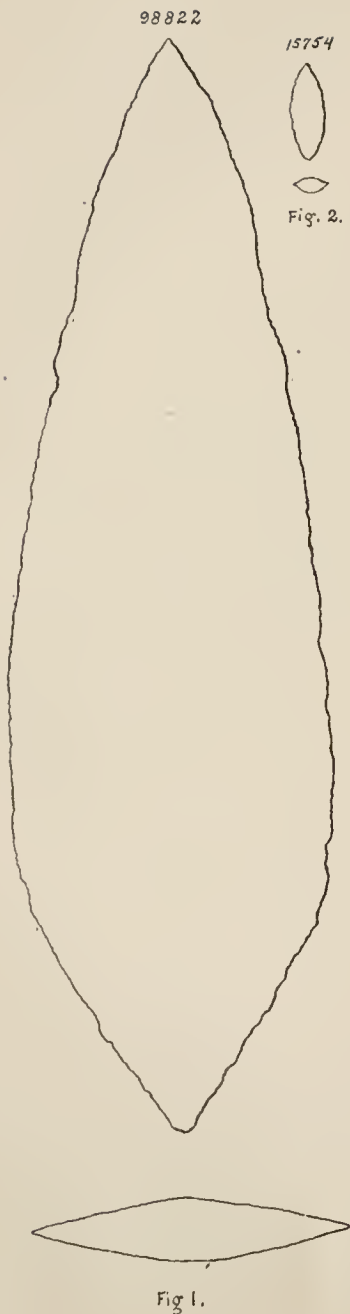
According to the writer's classification, the primary divisions of arrow and spear-heads or knives, are as follows:

1. Leaf-shaped, Classes A, B, C.
2. Triangular.
3. Stemmed, Classes A, B, C.
4. Peculiar forms, Classes A, B, C, D, E, F, G.

I. LEAF-SHAPED.

This division includes elliptical, oval, oblong and lanceolate forms, bearing relation to the shape of a leaf, and are without stem, shoulder or barb.

Class A.—This has finely-chipped implements of the form of a laurel leaf, elliptical and pointed at both ends. Their widest place is 1-3 or 1-4 the distance from the base. They correspond substantially with the French Solutreen type of implement belonging to the Paleolithic period of the Stone Age. (Figs. 1 and 2.)



Class B.—This class includes a variety of oval and ovoid forms. The specimens are usually thicker and wider than those of Class A. They may be more or less pointed, with bases convex, straight or sometimes slightly concave. (Figs. 3 and 4.)

Class C.—These are long, thin blades, narrow, with nearly straight parallel edges, more like a poignard. The bases may be either convex, straight or concave. They are peculiar to the Pacific coast in the United States of America. (Figs. 5 and 6.)

II. TRIANGULAR.

This division includes all specimens which, according to geometric nomenclature, approach the form of a triangle, whether the edges or bases be concave, straight or convex. They are without stems and, consequently, without shoulders, though in some specimens the extreme concavity of the base produces barbs. (Figs. 7 and 8.)

III. STEMMED.

This division includes all varieties of stems, whether straight, pointed or expanding; whether round or flat, and whether the bases or edges be convex, straight or concave.

Class A.—Lozenge-shaped, stemmed, but not shouldered nor barbed. (Figs. 9 and 10.)

Class B.—Stemmed and shouldered, but not barbed. (Figs. 11 and 12.)

Class C.—Stemmed, shouldered and barbed. (Figs. 13 and 14.)

IV. PECULIAR FORMS.

This division includes all forms not belonging to the three others, and provides for those with such peculiarities as distinguish them from other divisions, but which, by reason of their restricted number or locality, can scarcely form a division for themselves.

Class A.—Beveled edges (Fig 15). The bevel is almost always in one direction. These are peculiar to the United States, and are confined principally to the parallelogram of the lake and interior valley region, bounded by Ohio and Georgia, Arkansas and Minnesota. It was for a long time believed that these were simply freaks of the workmen and had no signification or sep-

arate use. But experiments have demonstrated that the bevel is sufficient to give the arrow a rotary motion when shot from the bow. Whether this was accidental or what was the purpose of the maker, has never been discovered. If a rotary motion was the desideratum, why it was not produced by the feathering of the arrow has not been explained.

Class B.—Serrated edges (Fig. 16). The workman, instead of making the edges of the implement smooth, even and regular (which was the usual course), chipped them at slight intervals, leaving sharp and pointed protuberances, producing serrated, tooth-like edges which would make a rough and jagged wound.

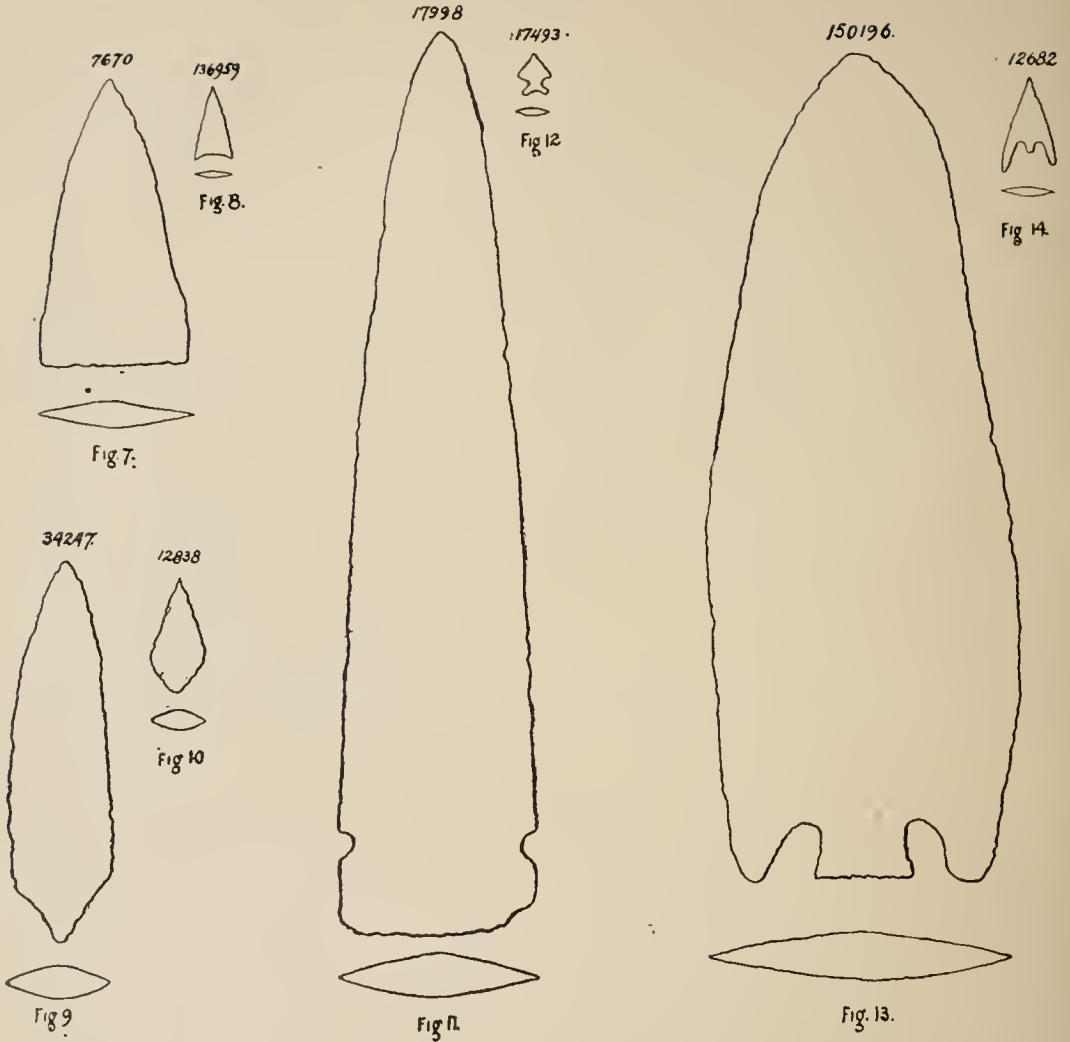
Class C.—Bifurcated stems (Fig. 17). In this class the implement may have such form and characteristics as alone would assign it to another division or class, but the bifurcation of its stem is sufficiently peculiar to require a different assignment, and so this class has been established. The bifurcation of the stem makes it forked so that it can straddle the shaft when being inserted in the split, and this slight fastening, whether by sinew or gum, will hold it in place.

Class D.—This class has long barbs which are square at the ends (Fig. 18). While possibly not confined to these countries, they are seemingly more plentiful in England, Ireland and Georgia, U. S. . . ., than elsewhere. No satisfactory explanation has been given of their peculiarity, either of form or locality.

Class E.—Triangular in section (Figs. 19 and 20), these are peculiar to Chiriqui, Colombia, and Scandinavia.

Class F.—Thin, almost flake-like in appearance, not made pointed, nor are the edges worked down by secondary chipping (Fig 21). The cutting edge is at the front, at the broadest end—*tranchant transversal*—and thus propelled, will make a wound large enough for the arrow-shaft to follow. These implements are chisel-shaped, and contention has been made whether they were not chisels instead of arrow-heads.

They have been found in Europe attached by sinew lashings to a wooden handle which, from its size, might have been either

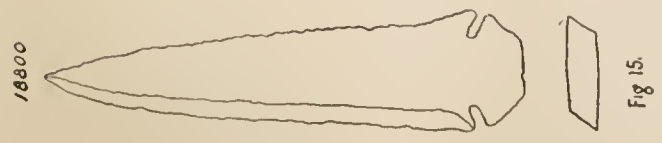
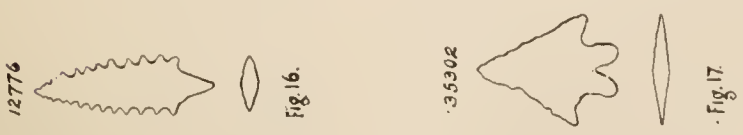
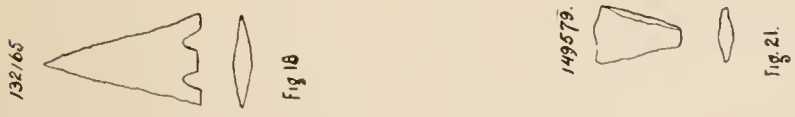
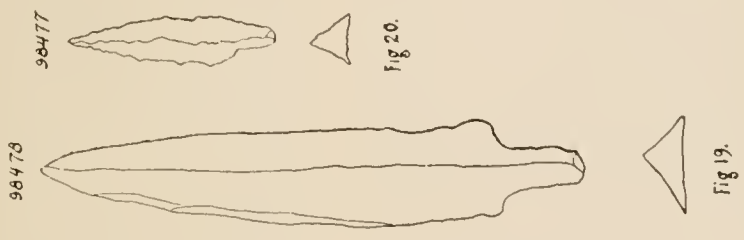
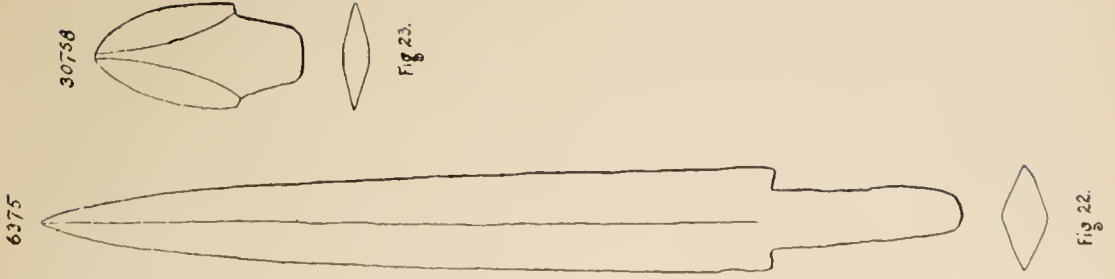


chisel-handle or arrow-shaft, while it was so broken in length as to leave the question undetermined. The author has suggested that these might have been the implements used in prehistoric surgical trepanations, a purpose for which the implement was in every way fitted.

Class G.—Large implements of slate (Figs. 22 and 23), usually with pointed stem or tang for insertion in a longitudinal hole

in the handle. These are almost the sole class of prehistoric arrow or spear-heads found which have been ground or polished. They are lozenge-shaped in section, are peculiar in North America to the Eskimo country and to the Northeastern States.

The foregoing practically covers all forms of these implements; but great differences in size are met with between the various classes, and even within each class. For



example, the leaf-shaped implements of Class I have been found in France, Mexico and the United States, and varying in length from 13 1-2 inches down to one inch. Single illustrations of these specimens, drawn to a reduced scale, are therefore almost valueless to show the differences in size. They should be drawn either full size or, if reduced, they should be represented in series so that they can be compared. The illustrations here given are for size, as well as form, and will represent the largest and the smallest specimens. In order to make these illustrations complete, and for a proper understanding, the series should be filled by sizes shaded into each other, because specimens are found representing every quarter-inch between these extremes. These implements are usually made of chippable rock common to the locality, though in many cases they, and possibly the material, have been transported long distances.

The black, pyromachic flint or chert, of Brandon and Cissbury, in southern England has, in the form of arrow-heads, been disseminated practically throughout the country. The white flint or chert from the Spiennes quarries in Belgium, has also a wide distribution. The same is true of the white flint of northern France. The beeswax flint of Grand Pressigny, central France, has been found in twenty-nine different departments of that country, and extends on to the east nearly to Lake Geneva. The yellow flint of Scandinavia is distributed throughout the country. The same is true of the flint arrow and spear-heads from the various quarries in the United States. The material in Flint Ridge may be found in any part of Ohio, and not infrequently in Kentucky and West Virginia. The white novaculite of Arkansas has been found in Illinois and Ohio. The white and yellow flint of Georgia extends throughout it to the adjoining state of South Carolina. Spear-heads of obsidian, from the Rocky Mountains, were found by Professor Moorehead in the mounds of the Scioto Valley, Ohio.

These statements show the distribution in prehistoric times of arrow and spear-

heads. The details would carry us far beyond the limits of the present paper.

The question may properly be asked as to the differences of functions between these flint implements, especially those of extreme sizes. As suggested in the title, they may have served as arrow or spear-heads, or as knives, but therein the sole difference would be determined by the size of the implement, and the size and the kind of the handle in which it was inserted. As the handles have almost universally disappeared from these implements belonging to prehistoric times, it is only by comparison and suggestion that any determination can be given as to function.

One of these implements of a large size would scarcely be supposed to have served as an arrow-head—it would be too heavy. Yet the infinitely smaller ones undoubtedly did serve for that purpose, while others so large as to be out of the usual category, can be shown to have served in this capacity also. It is not infrequent to find arrow-heads in use among modern savages of the infinitesimal type; that is, say three-fourths of an inch long, one-half inch wide, and one-eighth of an inch thick, though arrow-heads have been found four inches long, one and a half inches wide and three-eighths of an inch thick. I have one of that size which was found in the pelvic human bone from a burial place in Kentucky. The implement had entered the body from the rear, and penetrated so as to be almost completely buried in the flesh. Arrow-heads of large size have been used by savages against large game like buffalo and elk.

Probably the only true means of determining the function of this implement as to whether it was an arrow, or spear-head or knife, is by the handle. If the handle was stout and long, it became a spear. If stout and short, it became a javelin. If stout and still shorter, it might be a knife. If slim, and say two or two and a half feet long, it might be an arrow-shaft; if that many inches, it might be a knife. It is considered impracticable to determine from an inspection of the flint or stone arrow-head as to what kind of handle it had, and for which of these purposes it served.

LIST OF ILLUSTRATIONS FOR "CLASSIFICATION OF ARROW, OR SPEAR-HEADS, OR KNIVES."

THE LAKE DWELLERS OF SWITZERLAND.

Figs.

LEAF-SHAPED.

1. Class A.—Oaxaca, Mexico. $12\frac{1}{2} \times 3\frac{3}{4} \times \frac{1}{4}$ inches. Cat. No. 93,822, U. S. N. M.
2. Class A.—California, U. S. A. $1\frac{1}{2} \times \frac{5}{8} \times 3-16$ inches. Cat. No. 15,754, U. S. N. M.
3. Class B.—Tennessee, U. S. A. $9 \times 2\frac{7}{8} \times \frac{5}{8}$ inches. Cat. No. 6,801, U. S. N. M.
4. Class B.—California, U. S. A. $1\frac{1}{4} \times 7-16 \times 3-16$ inches. Cat. No. 15,760, U. S. N. M.
5. Class C.—California, U. S. A. $10\frac{1}{4} \times 1\frac{1}{2} \times \frac{1}{4}$ inches. Cat. No. 21,626, U. S. N. M.
6. Class C.—California, U. S. A. $1\frac{1}{2} \times \frac{1}{2} \times \frac{1}{8}$ inches. Cat. No. 15,161, U. S. N. M.

TRIANGULAR.

7. Ohio, U. S. A. $3\frac{3}{8} \times 1\frac{1}{4} \times 5-16$ inches. Cat. No. 7,670, U. S. N. M.
8. Kansas, U. S. A. $\frac{3}{4} \times 7-16 \times 1-16$ inches. Cat. No. 136,959, U. S. N. M.

STEMMED.

9. Class A.—Lozenge-shaped, Massachusetts, U. S. A. $4\frac{1}{2} \times 13-16 \times \frac{3}{8}$ inches. Cat. No. 34,247, U. S. N. M.
10. Class A.—Lozenge-shaped, Oregon, U. S. A. $1\frac{1}{4} \times \frac{5}{8} \times \frac{1}{4}$ inches. Cat. No. 12,833, U. S. N. M.
11. Class B.—Stemmed and shouldered, Rhode Island, U. S. A. $10\frac{1}{2} \times 2\frac{7}{8} \times \frac{1}{2}$ inches. Cat. No. 17,998, U. S. N. M.
12. Class B.—Stemmed and shouldered, Kentucky, U. S. A. $\frac{1}{2} \times \frac{3}{4} \times 1-16$ inches. Cat. No. 17,493, U. S. N. M.
13. Class C.—Stemmed, shouldered and barbed, Arkansas, U. S. A. $9\frac{1}{2} \times 3\frac{1}{2} \times 9-16$ inches. Cat. No. 150,196, U. S. N. M.
14. Class C.—Stemmed, shouldered and barbed, Oregon, U. S. A. $1\frac{1}{2} \times \frac{5}{8} \times \frac{1}{4}$ inches. Cat. No. 12,682, U. S. N. M.

PECULIAR FORMS

15. Class A.—Beveled edges, Tennessee, U. S. A. $5\frac{1}{2} \times 1\frac{1}{4} \times \frac{3}{8}$ inches. Cat. No. 18,800, U. S. N. M.
16. Class B.—Serrated edges, Oregon, U. S. A. $2\frac{1}{2} \times 3-16$ inches. Cat. No. 12,776, U. S. N. M.
17. Class C.—Bifurcated stems, Ohio, U. S. A. $19-16 \times 1\frac{1}{4} \times 3-16$ inches. Cat. No. 35,302, U. S. N. M.
18. Class D.—Long barbed, with square ends, Georgia, U. S. A. $1\frac{1}{2} \times 11-16 \times \frac{1}{4}$ inches. Cat. No. 132,165, U. S. N. M.
19. Class E.—Triangular in section, Chiriqui, Panama. $6\frac{1}{4} \times 1\frac{1}{2} \times \frac{1}{2}$ inches. Cat. No. 98,478, U. S. N. M.
20. Class E.—Triangular in section, Chiriqui, Panama. $2\frac{3}{8} \times 9-16 \times 7-16$ inches. Cat. No. 98,477, U. S. N. M.
21. Class F.—*Tranchant transversal*, France. $1 \times \frac{5}{8} \times 3-16$ inches. Cat. No. 149,579, U. S. N. M.
22. Class G.—Slate, polished, Maine, U. S. A. $10\frac{1}{2} \times 1\frac{1}{4} \times \frac{1}{2}$ inches. Cat. No. 6,375, U. S. N. M.
23. Class G.—Slate, polished, New York, U. S. A. $2\frac{7}{8} \times 1\frac{1}{4} \times 5-16$ inches. Cat. No. 30,753, U. S. N. M.

Note—The Plates accompanying this article are one-half size of original relics.

THOMAS WILSON.

I was much interested during my visit to Switzerland last year with the remains of the settlements and relics of its ancient Lake Dwellers. In most, if not all, of the several lakes there, as well as those in the northern part of Italy, traces of their prehistoric habitations, together with relics of their household utensils, ornaments and implements of war have been found.

The manner of building the foundations (we can only observe remnants of the substructure and we know little or nothing of the buildings that were above the water line), differs somewhat on account of the varying formations of the bottoms of the lakes. In many instances where the bed of that particular part of the lake which had been chosen was of clay, piles driven down a short distance were sufficient support for the platform upon which the houses were to be built. In some cases these piles were connected under the water by heavy cross-beams, thus making them more secure. In other localities where the lake bottom was too hard to admit of piles being driven into it, stones were placed around the base of upright, wooden posts, that served as supports for the building, or, more correctly, the platforms above.

The clusters of houses or villages were usually situated a short distance from the shore in some protected cove, where the water was shallow. The obvious reason why these people built their residences over the water instead of on the land was for the protection which it afforded them from incursions of wild beasts, which we know were numerous in those days in that part of Europe. Perhaps it was also for security from attacks of the fierce mountain tribes of savages.

Some of these villages over the water were as much as a thousand feet in length and several hundred feet in width. Only remnants of the piles supporting them now remain; and among these are found the relics of the daily life of their unknown builders and occupants. In the refuse that accumulated beneath the houses these are found by digging in the water or by dredging, consisting of tools, utensils, imple-

ments and ornaments, made of bronze, stone, bone, horn and pottery. Of these objects, recovered in great numbers, I will speak separately.

Of Bone—Which material was used extensively, many needles from two to eight inches in length occur. Awls, also, of about the same length as the needles, are numerous. These closely resemble the specimens from American mounds and stone graves. There are also bone knives, some not more than an eighth of an inch in thickness, several inches long, and an inch or less in width. Bone points for fish spears and arrows are often seen; and various other articles of bone, the use of which is difficult to determine.

Of Horn—The only horns used by the Lake Dwellers were those of the stag or reindeer; and they were utilized chiefly for handles, or sockets for celts, chisels, gouges, etc., of stone. The larger parts of the antlers were used for these purposes; the smaller parts and tips were made into various objects similar to those of bone.

Of Bronze—The knowledge and use of this compound metal marks the advance and stage of culture of these interesting people of the lakes. This material was very extensively used by them in the manufacture of a great variety of things useful and ornamental, such as swords, knives, fish hooks, javelin heads, pins, needles, bracelets, etc., etc. Their bronze swords were similar to those found in other parts of Europe, of the same era, rather short, broad and thick; some plain, others highly ornamented. Their bronze knives are of two patterns, some very large and curved, and thick on the convex edge. These were evidently intended for hard usage, probably in harvesting; for we know that these people raised barley, wheat and flax. The smaller knives were of finer workmanship, averaging about five inches in length, very thin, and now, after having lain buried in the mud of the lake for twenty centuries or more, still have fine, cutting edges. The javelin and spear-heads resemble those of Roman and Etruscan make, and perhaps many of them were forged in Rome and wielded by the Roman invaders of Helvetia. The bronze fish hooks are almost identical in form with those of iron used

by us today, having at the end of the shaft a flat head to retain the line, and sharp point and barb. They are recovered in great quantities. The needles of bronze are very much like those of bone, but rather heavier. The pins are of all sizes and many patterns, and were employed principally as ornaments. They range in length from two to fifteen inches, and some of them must have been beautiful when new. Specimens of them are seen finely engraved with fancy figures their entire length; some with flat ornamental, heads; others surmounted by balls or other designs an inch or more in diameter. The bronze of which they were made was susceptible of high polish and, of yellow color, glistened like gold. Many of the bracelets are quite plain, others are most elaborately engraved and beautified. Bronze buttons were in general use by the lake people. They are of all kinds and shapes, from half an inch to four inches in diameter, usually concave disks with a small eye in the center of the concave side for attachment to the garment. Probably the most interesting of the bronze, lake relics is their so-called "money." This is in the form of rings, about three-quarters of an inch in diameter and not more than one-eighth of an inch in thickness either way. Hundreds of these rings are sometimes found strung on a larger open one, like our key rings, showing how the capitalists of the pile dwellings carried their loose change.

Of Pottery—A great deal has been recovered, comparatively little of it, however, in perfect state of preservation. It is mostly of coarse texture, rudely formed, and but few pieces displaying taste or art culture in this line. But few of the vessels show any ornamentation, and all were coarse and only saw service in the kitchens.

Some textile fabrics, well woven and well preserved, have been recovered; and charred fruits, grain and seeds, and even bread, have been found in large quantities.

A few words now as to how these relics are discovered and brought to the surface. Last summer I visited a small fishing station a few miles south of Neufchatel, on the west shore of the lake Neufchatel, and from the fishermen there obtained a number of specimens just brought up from the water. This was an ideal spot for the vil-

lage of the Lake Dwellers, being a deeply-indented cove, facing the sunlit east, and well protected on the north and west by a high ridge of woodland. The water here was shallow, with a hard, sandy-clay bottom. A fishing net was seldom hauled in at this place without having some relic in or attached to it. Many are obtained in this way, and others are brought up by divers; and some are dug out of the mud and sand of the shores.

The prices asked for them varies considerably. Celts are valued according to the material of which they are made; not in regard to their size or workmanship. Small celts of jade sell for 25 francs (\$5.00), while larger ones of green stone, fastened with asphaltum in their original horn sockets, can be bought for from ten to fifteen francs each. Bronze pins and needles are offered at all prices from half a franc (10 cents) up to several dollars each. Other specimens are valued about at the same rates.

These relics of the Lake Dwellers having been discovered but comparatively a short time ago are still plentiful and easily obtained. Our local museums here should now secure typical specimens of them, as much that is interesting and instructive can be gained by contrasting the arts of our prehistoric Indians with those of ancient Helvetia. There are many points of similarity between them; they show alike the same wants, impulses and inventive capacities of the two people, and the marked step in upward progress that the one had gained in advance of the other.

D. I. BUSHNELL, JR.

St. Louis, Mo.

The Americans, under Mr. Haynes, who are exploring the buried ruins of the ancient Chaldean city of Nippur for the University of Pennsylvania, have found far down beneath the remains of a succession of Assyrian cities, one built upon the ruins of another, records on stone dating 5000 years B. C. "Ancient as these inscriptions are," says Mr. Boscarven, "they are not the records of a nation just emerging from savage life, but of rich, powerful, cultured kingdoms; thus indicating centuries of previous growth and development."

THE HOPEWELL GROUP.

WARREN KING MOOREHEAD.

(Copyright, 1897.)

(Continued.)

Mound No. 18, southwest from it, Squier & Davis have not recorded.

No. 18. This small mound contained several decayed skeletons and a good altar,* (the latter being shown in Fig. 3) several skulls, bones, cut and perforated, were found near the skull and, from their appearance, most of them, I judge, were worn as ornaments. (See Fig. 4.) A black platform pipe, somewhat damaged, also accompanied one of the skeletons. Dr. Cresson says of this:

"It will be interesting to mention a peculiar habit of the people who erected the tumuli at Hopewell's farm, that of placing along side of their dead, ornaments made of the superior and inferior maxillary bones. In mounds Nos. 18, 23 and 3 at the above mentioned earthwork, the upper jaw was found placed alongside of the left humerus about four inches below the articulation of the glenoid process of the scapula. The specimens in question had been in two cases cut across the alveoli a little below the level of the incisors and bicuspid, and in another instance, just above. The work of cutting across the bone and teeth had evidently been done by some sharp instrument, probably of metal. It has been suggested that the specimens had been sawed across and then ground down, but the incisions are so sharp, and the marks of the instrument with cutting edge so plain, that we deem this to be impossible."

Mound 19 contained very little of interest and sheds no particular light on the structure. I have often wondered, in digging small mounds, if members of another tribe shortly after the interment took place, dug down to the bodies and robbed them of their valuables. We have found mounds which did not appear to have been disturbed in recent times, or, in fact, within several hundreds of years, which present just such conditions. It is possible, but is it probable? Would not a rival tribe be tempted, knowing that the most valuable property of the de-

*Two accounts speak of this as having been found in the Effigy and are, therefore, in error.

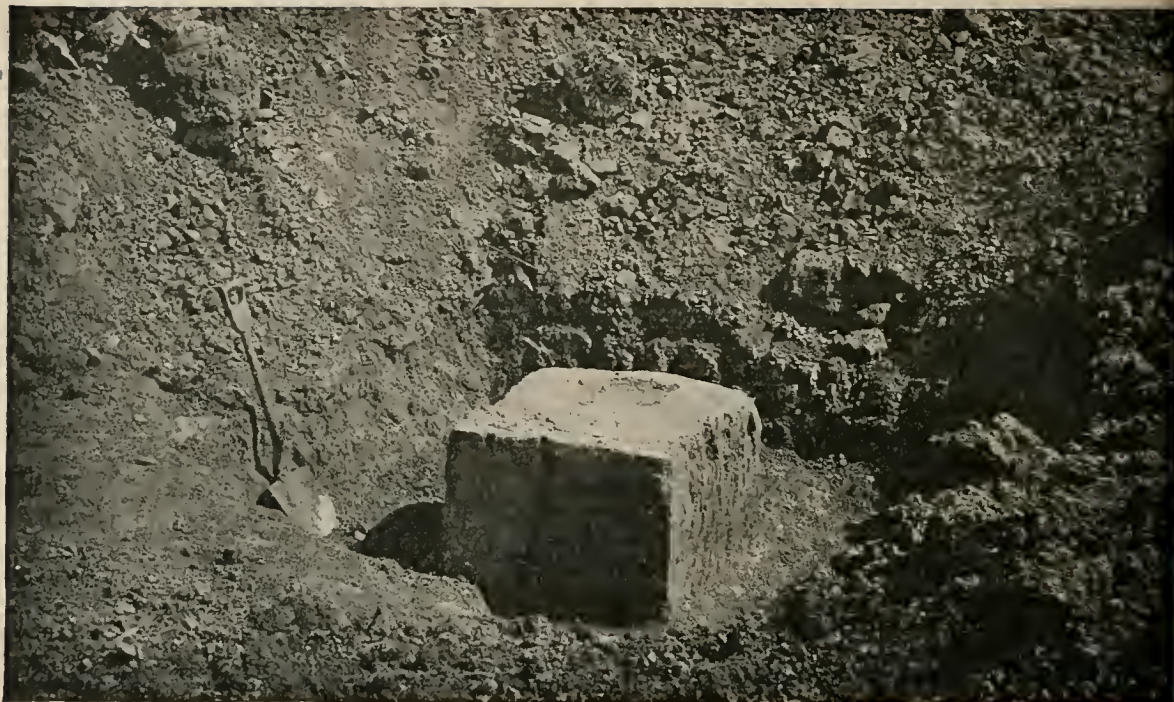


FIG. III—Altar from Mound No. 18.

ceased and offerings from his friends were placed with his remains? Was their fear of the supernatural sufficiently strong to prevent them from robbing the grave?

No. 19 was an example of a mound which had been previously disturbed. A stone layer was found extending through the center. We uncovered a rude altar slightly burned. The bowl of this contained carbonized galena, small pieces of bones, mica, fragmentary flint and bone implements and some quartz. The altar was taken out entire. As it was only partly burnt and not much harder than sun-dried brick, no little difficulty was experienced in removing it. We did not ship it and it yet lies in the mound (boxed) and covered with three feet of earth.

Professor Putnam had taken out a very large altar at the Turner Group, after a great deal of trouble, and presented same to the Cincinnati Society of Natural History—it being so heavy that it was liable to break on account of its weight—hence he decided not to ship it east. This was the only altar preserved in a museum in the United States up

to 1891. We took out no less than four, shipping one to Washington, two to Boston and one to Chicago.

These altars weighed from 400 to 850 pounds, and all went through in good condition. One from the Effigy mound was broken in moving it from the dairy building to the Anthropological building on the W. C. F.'s grounds.

Altars are removed in the following manner. A deep trench, some four or five feet in width, is cut entirely around the object. A frame work of heavy planks 12 or 15 inches wide is fitted around the upper part. If the depression is deep this frame work is made eighteen or twenty inches in width and hammered down until it fits very closely. Underneath, at one end, the men cut a narrow strip four or five inches in width, run a board through and fasten it to the bottom. Other cuts are made and boards slipped in, one at a time, until the whole upper portion of the heavy mass of burned clay is boxed. Then it is carried out, straw and grass to the thickness of several inches are put on the top and a strong cover-

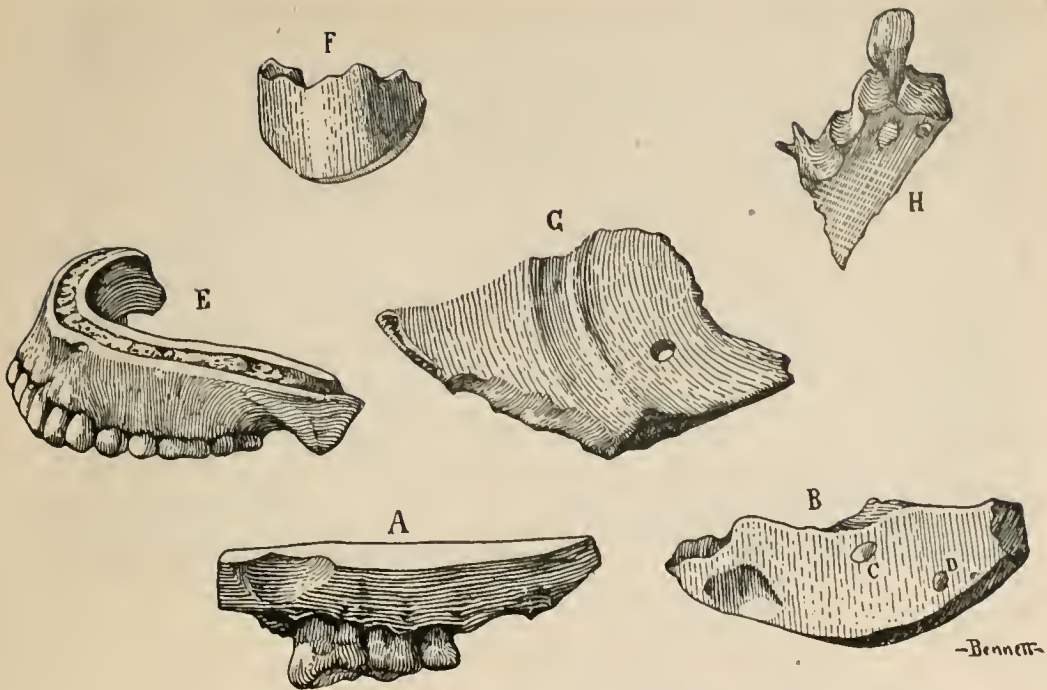
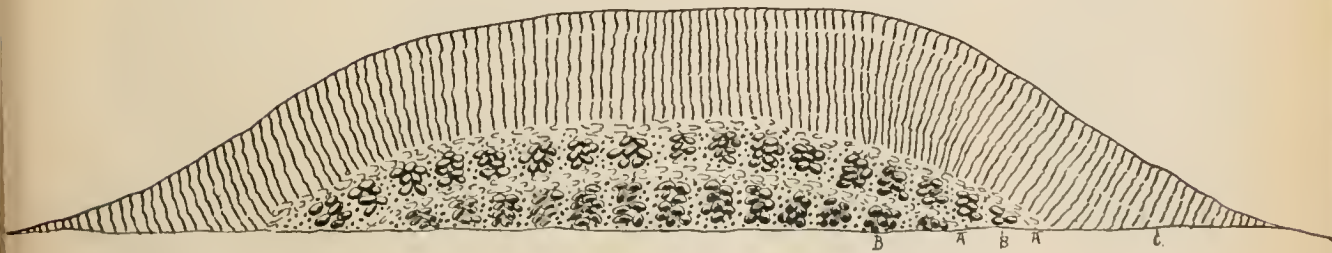


FIG. IV—Ornaments cut from Cranial Bones, Mound No. 18.



Mound No. 2 - Cross Section.

A - Sand Layer.
B - Piles of Discs.
C - Earth.

Figure V.



FIG. VI—Pile of Discs by Headquarters' Tent.



FIG. VII—Discs and Large Spear, from Mound No. 2 (Greatly reduced).



Fig. X.—Camp Scene at Hopewells. The Central Figure (bearded) is Dr. H. J. Cresson.

ing nailed across. It took our force about a day and a half to properly remove the largest altar.

Mound No. 2. This remarkable structure was partially examined by Squier & Davis. They took out 600 flint discs and reported that about 4,000 remained. Squier & Davis were exceedingly modest in their statement. It is considerably less than one-half of the original number. The following table was prepared in my official capacity as field assistant:

Excavated from the mound by our men.....	7232
Taken out by Squier & Davis	600
Taken out by Mr. Steel	200
Given Mr. Hopewell, prior to official count..	80
Found upon the surface near mound afterwards	42
From other sources	31
Total	8185

A large shouldered spear head was the only implement in the entire number differing from the circular and leaf-shaped outlines of the disks. It can be seen in Fig. VII, together with various forms of the disks.

Squier & Davis report that the disks were placed upon edge in several layers. Their error is due to a hasty examination. In taking the mound entirely out, we found the disks lying in little pockets or bunches of 12 to 15 each, with layers of sand around each mass. (Fig. V.) The deposits covered an area, nearly circular in form, of 22 by 26 feet. In places they ran from a foot to 18 inches in depth. The builders of the structure had apparently carried in their hands all the disks they could transport readily and deposited them upon the same level, while others of their friends poured sand between and over each deposit. Having completed so much of the mound, a second series of deposits was made, exactly like the first. Most of the disks are of a light blue color; some are gray. They are made from flint nodules which occur in Indiana and Tennessee.

The magnitude of the find surpasses any discovery previously made. Fig. VI represents the specimens heaped at the side of our tent. They cover a space of 15x8x3 feet, and weigh nearly 5,000 pounds. It required four horses to haul them from the mound to the camp site.

(CONTINUED NEXT MONTH.)

EDITORIAL.

One of the most interesting chapters of Hon. J. V. Brower's valuable book, recently published, entitled "The Missouri River and its Utmost Source," is the last one, the third of his "Archaeological Addendum," on "Quivira; The Elliott Indian Village Site." The location of this ancient village of unknown aborigines is in the Briggs farming district of Geary county, Kansas, seven miles due south of the Kansas river and fifteen miles from the city of Manhattan. "During a past geological era," says the author, "a limestone formation accumulated at this point, and there is a very considerable deposit of blue chert, the whole bearing a fossiliferous element of an encrinal character. Since the deposit of this blue flint erosion has taken place a picturesque valley has been formed, leaving the limestone and chert as an outcropping on the high bluffs. At this place," he goes on to state, "the second terrace above the creek on the north side, was found to have been, at some unknown date, the site of an extensive Indian village. Two hundred and fifty chipped stone implements of different kinds, sizes and varieties were picked up along the terrace and placed in convenient piles. Flint blocks, rejects, finished and half-finished points and knives, broken implements and a remarkable quantity of spalls, large and small, were scattered everywhere along the terrace. * * * *

At the point on the chart marked as the location of a workshop, we discovered about a hundred implements, and the spalls could be numbered by the thousand. Up to a late hour in the day no article of iron, copper, pottery or lead was found. Finally two small pot-sherds were picked up down near the creek, but away from the central locality of the village site."

A communication to the author from W. J. Griffing, an astute archaeologist, residing in Manhattan, is incorporated in this chapter, with others, in which he says: "The evidence is quite strong that this section was at one time the home of a numerous race of people skilled in the art of making pottery, and in manufacturing arrow-points, spear-points, knives, scrapers, etc.,

of flint; stone axes and hammers of flint and granite, pipes of red pipe stone, and numerous instruments and ornaments of bone and shell." He states further that sepulchral mounds are numerous on the tops of the bluffs overlooking the streams, one of which he opened "contained burned bones, arrow-points, etc, and also some old-fashioned glass beads, blue and white in color, and a short coil of brass wire, showing contact with the whites."

Mr. Brower believes that he has found here the mythical Quivira, the ultimate goal of Vasquez de Coronado, who in 1540-41 led a band of Spanish marauders from the City of Mexico westward to the Pacific coast, thence north through the present Mexican states of Jalisco, Sinaloa and Sonora, thence eastward through Arizona into New Mexico as far as the old Pecos pueblo, from which place he marched in a northeastern direction, crossing the Arkansas river and proceeding, among herds of buffalos, and prairie-dog towns, which he well describes, across the plains to a considerable river on which was situated a village of savages, where, finding neither city nor province of Quivira, nor indications of gold or other portable wealth, he retraced his steps. A hundred miles south of Santa Fe are yet to be seen the ruins of an old pueblo known as Gran Quivira, described by Gregg in his "Commerce of the Prairies," and yet marked on maps of New Mexico. It is strange that a scholar of the acumen and penetrating discernment that distinguished Mr. E. G. Squier should have adopted the error, entertained by several less-informed historians, of tracing the course of the Spanish expedition from Pecos into the plains and around to the Quivira named (probably not then known to them), so short a distance, and south, of their starting point. How Coronado knew that he had reached the fortieth parallel of latitude, as he states, is not explained. But the faithful descriptions he gives of the streams he crossed, of the buffalo and prairie dogs, and roving Indians and their lodges, would be sufficient without the corroborative testimony of Jaramillo and Castaneda, historians of the wonderful journey, that he reached the Kansas river, the point of his

countermarch, where he was informed by the Indians that a hundred miles farther on was a large river "two leagues wide" (the Platte or Missouri). The Quivira he sought had probably no existence, and the accounts of its wealth and magnificence were wholly inventions of his guide, "the Turk," to lure him far into the treeless wilderness where he would perish from fatigue and starvation.

To the question, to what race of men can the establishment of this (Elliott) village be ascribed? Mr. Brower answers: "That they were not of the mound-building race of men is practically certain. That they were probably Quivirian Indians, whomsoever they may have been, is possible." In support of this hypothesis he sums up the following conclusions:

1. The evidence of the village site itself, and of several other similar seats of Indian occupancy.

2. Their location on both sides of the Kansas river, "the large stream," as stated by Coronado.

3. Remains of pottery and stone art of various kinds, proving the presence of the mound-builders, and probably other people of different degrees of culture, prior to that of the Quivirians met there by the Spaniards.

4. Presence of glass beads and brass wire of European make in a mound, confirmatory of Coronado's statement that he distributed such articles among the Indians.

5. That this, and surrounding village sites described in this locality, are between the 30th and 40th degrees of latitude; and he may have added, are about a hundred miles from a great river beyond.

The exact northern limit of Coronado's march may never be known with certainty. It is not improbable that he gazed upon the limpid waters of the romantic Kaw at south Manhattan or Topeka. Let that be as it may; the Elliott Indian village site is a discovery of importance; not so valuable as a contribution to American history, however, as to our archæology. At this distance from the outcrop of limestone and blue flint, and with Mr. Brower's data as the sole basis for correct deductions, we cannot escape the

conclusion that this ancient village site was a flint mine and vast workshop from time immemorial, as was Flint Ridge in Ohio—and also the quarries of Catlinite in Minnesota—a “neutral strip” observed as a haven of peace if not friendship, where all tribes, near or remote, came for their supplies of raw material, ignoring for the time their strifes and animosities.

Flint was a valuable commodity to our primitive people; indispensable as a means of defense and life-support. It was nowhere to be obtained on the great table lands between the Mississippi and Rocky Mountains, and the sources of supply in isolated outcrops were rare. The evidences observed by Mr. Brower in and around the old village sites and camping places in that blue flint region, of different degrees of mechanical skill in working stone and pottery, in relics of copper from the lakes and of marine shells from the seaboard, and of diverse methods of life, point to the coming together of tribes from widely separated districts to this rendezvous for a specific purpose. The glass beads and brass wire found in the burial mound with the bones of an Indian only prove that this flint ridge was still the source of stone weapons subsequent to his contact with Europeans.

The opinion here expressed is merely suggestive; intended to stimulate further investigation and induce archaeologists to scan that deposit of blue flint closely for quarry pits and rude mining appliances.

J. F. S.

In this issue is an interesting paper on The Lake Dwellers of Switzerland, written by a bright, young law student who passed the greater part of last summer about the Alps and Swiss lakes. He sailed from New York again on the 8th of last month to spend the coming summer in Italy, and has kindly promised us while there to write concerning the progress of excavating the ruins of Pompeii, the recent discoveries made there, and of other matters connected with European archaeology.

In this number we publish the second paper of the series by Prof. Warren K. Moorehead, minutely describing his exploration of the famous Hopewell group of mounds in Ross County, Ohio. Since the close of the World's Columbian Exposition, in 1893, the public have been anxiously expecting this report from the illustrious scientist who was in charge when the exploration was authorized. As there seemed not the remotest indication of its appearance from that source during the century, Prof. Moorehead, who did the work, has yielded to the persistent requests of archaeologists from all parts of the country to give them, while they yet live, the details of his wonderful discoveries. The deposits of strange art remains, of rare materials employed, and surprising evidences of advanced culture and weird superstitions revealed by this investigation, constitute it the most interesting and valuable revelation of aboriginal life yet made within the limits of the United States. It startled archaeologists throughout the world, and Prof. Moorehead's complete report of it will claim their earnest attention.

J. F. S.

The world of science has been apprised by the newspapers of the death of Prof. Edward D. Cope, of the University of Pennsylvania, at his home in Philadelphia, on the 13th of last April. We mention this sad occurrence to offer our tribute of high esteem and respect for the eminent scientist, profound scholar and genial gentleman, who gained the highest distinction here in his chosen field, and has gone to the reward to which he was so well entitled

A movement has been inaugurated in Arizona to secure means and legislation for the preservation of that grandest and most perfect ruin of the Cliff Dwellings of the Verde Valley, locally known as “Montezuma's Palace.” An effort was made to induce the last legislature of Arizona to appropriate the sum of \$3,000 for this purpose, but failed. And now, a few intelligent and public spirited individuals, headed by Dr. Miller, of Prescott, and Frank C. Reed, of Flagstaff, will endeavor to raise by pri-

vate subscription, a sufficient amount to secure this splendid ruin from further molestation by vandals and disintegration by the elements. It is a very commendable object, and should receive generous support. Those disposed to give it material aid can do so by remitting their contributions to Frank C. Reed, at Flagstaff.

It is scarcely necessary to call the reader's attention especially to the paper in this issue by Mr. J. W. Seever, Secretary of the Missouri Historical Society, descriptive of certain flints and a pair of idols recovered from a stone grave in Tennessee. These flints, collectively, for exquisite workmanship, extraordinary lengths and forms, and fine proportions, constitute the most marvelous find of prehistoric art in working this material yet discovered. The excellent drawings for their illustration by a first-class artist, Mrs. Alice Martin, of Virginia, Ills., are strictly accurate, but necessarily on a reduced scale that fails to convey an adequate impression of the beauty and strange designs of these curious objects.

J. F. S.

Although the Algonquin stock of Indians covered a vast part of the northeastern portion of the continent, yet our data regarding it, in some lines, are extremely meagre. In linguistics we have practically no texts available for study. It is true, there are hymn books and Bibles in the Algonquin dialects, but these are the white man's thoughts and words put into Indian, while we have practically no Indian logic and composition with interlinear translation. In this line we have much more regarding some smaller western tribes.

The Bureau of Ethnology has felt the importance of securing information regarding tribal organization among the Algonquin tribes before such bonds have been supplanted by white methods. Professor W. J. McGee, therefore, has gone to Iowa to investigate this matter among the Sacs and Foxes.

H. I. S.

ANTHROPOLOGY AT THE UNIVERSITY OF WISCONSIN.

A course in Anthropology is now offered by Prof. J. H. Raymond at the University of Wisconsin. It is classed under Sociology and includes the discussion of the antiquity of man.

Archaeology, as a method of reconstructing ancient sociology, is finding its place in the courses of study of our foremost universities.

As it is found useful in studying the laws of human activities, it will be extended to other educational institutions and broadened in those where it has already entered.

A clause in the new tariff bill now before Congress imposes a duty on all antiquities. This clause is intended to cover antique tapestries and bric-a-brac imported to decorate the homes of wealth. Such material being a luxury may well be subject to duty, but as the clause now stands it shuts out scientific material for museums. While libraries and colleges can import books, no person or institution can secure foreign antiquities without paying the duty. This, of course, shuts out Mexican, Peruvian and other archaeological collections needed by our students of prehistoric America.

Efforts are being made to qualify this measure so that material for scientific study may be imported free of tariff.

Dr. Carl Lumholtz has returned to New York from his three years' expedition through Western Mexico. This expedition was sent out by the American Museum of Natural History to collect ethnological specimens and to investigate the people of the Sierra Madre Mountains. Dr. Lumholtz has secured many archaeological specimens in addition to those of ethnological value, and has taken photographs, measurements and notes of the native people.

H. I. S.

BOOK REVIEWS.

The Antiquities of Tennessee and the Adjacent States. And the State of Aboriginal Society in the Scale of Civilization Represented by them. A Series of Historical and Ethnological Studies. By Gates P. Thruston. Second edition. Cincinnati, O., The Robert Clarke Company, 1897.

From the long-established and reliable publishing house of The Robert Clarke Company, we have received a copy of the expected second edition of General Thruston's great book on the Antiquities of Tennessee. This splendid work is so well known and occupies such high rank in our archaeological literature, that a detailed review of it here would be both superfluous and out of place. Since its first appearance, in 1890, it has been recognized, here and in Europe, as a contribution to science of rare interest and value. The depth and extent of the author's researches; his scholarly and elegant style of expression, with its accurate and admirable descriptions, and profuse and fine illustrations, constitute it a production of exceptional worth and excellence.

The first edition has long since been exhausted, and the increasing demand for it has impelled the author to reissue the book, to which has been added two supplementary chapters, many notes and new illustrations, some alterations of previous conclusions, and ample accounts of all recent archaeological discoveries in the region of which it treats.

The new edition appears in superior binding; and its mechanical execution, in The Robert Clarke Company's best style, cannot be excelled.

Influence of Environment Upon Human Industries and Arts, by Prof. Otis T. Mason.

This monograph, reprinted from the Smithsonian Annual Reports for the year 1895, comprises one of Prof. Mason's Saturday lectures, delivered in the hall of the U. S. National Museum. It has much of the

terseness, depth of thought and uniqueness of expression that characterize all of his valuable contributions to anthropological science. In this hour's talk he reviewed the influences of man's environments from the mighty power of the sun down to the most commonplace agencies, and man's activities and capacities in every phase of life. His deductions are, as usual with him, clear, ingenious and philosophical. In a concluding paragraph he says: "The heir of the ages is one who owns the ages. He is the master of the ages, not their slave. Their lands and resources, their powers and machines, their productions and commerce, their accumulations and enjoyments are his to control. The heir of the ages is a master spirit. He causes the fire to burn, he is not consumed by it; he causes the waters to flow, he is not overwhelmed by them; he rides on the wings of the wind; he harnesses the lightning to his chariot. He is now the realization of the myth of Orpheus, at whose touch the rapid rivers ceased to flow, the savage beasts of the forest forgot their wildness, and the mountains moved to listen to his song." J. F. S.

The Discovery of Aboriginal Remains at Rockshelter, in the Delaware Valley. An Exploration of Durham Cave in 1893. An Exploration of Aboriginal Shell Heaps, Revealing Traces of Cannibalism, on York River, Maine. By Henry C. Mercer. The Atheneum Press, Boston, 1897.

Professor Mercer, the Anthropologist of the University of Pennsylvania, is justly classed among the distinguished American scientists. He is noted for the patient carefulness, exactness and reliability of his field observations. No object or condition, however insignificant, escapes his notice; and his clear descriptions, and pleasant way of telling what he saw, invests the driest and minutest details with interest. An accomplished naturalist and scholar, indefatigable in his investigations, with no fixed theories to support at the expense of distorted facts, are assurances of the excellence and accuracy of his work.

The three monographs above named are reprints from Volume VI, of the University

of Pennsylvania's publications. Where ordinary explorers would have seen nothing worth reporting, Professor Mercer's diligent search was rewarded by finding, in the accumulation of earth on the floor of an offset to the Durham cave, portions of a peccary's skeleton, an animal believed to have long since been extinct in all the region north of the Texan Red river. And in the small shell heaps of Maine he discovered, not only evidences of cannibalism practiced by the aborigines about whose camping place the shells and other refuse collected in low mounds, but also the remains of the dog—or his canine kinsman, the wolf. These are all important discoveries that bear with force upon heretofore controverted questions. There seems but little room to doubt the identity of the osseous remains since that point has been determined by so eminent an authority as the late Professor E. D. Cope. Yet, additional corroborative evidence in proof of the recent existence of the peccary in the latitude of the Delaware valley, may be deemed necessary for reaching final and definite conclusions.

These reports of Professor Mercer's investigations should have a wide circulation among students of early life in America, and cannot fail to claim their earnest attention.

Annals of Iowa. A Historical Quarterly. Published by the Historical Department of Iowa. Des Moines, April, 1897.

This pamphlet, of eighty pages, is No. 1, volume III, of the third series; is well printed and fully illustrated. Its initial paper, by Samuel Calvin, State Geologist, on "Pleistocene Iowa," is a very able production, presenting a graphic account of the closing period of the geologic period in the northwest. Then follow historical reminiscences, personal recollections of past events, biographies, obituaries and statistics; all of interest and value to the citizens of Iowa especially and to the reading public generally. Historical records of this kind, if maintained and published by all the states, would prove of incalculable value and aid to the future historians of our country.

A Table of the Geographical Distribution of American Indian Relics in a Collection Exhibited in the American Museum of Natural History, New York, with Explanatory Text, by A. E. Douglass.

Until recently but little attention has been devoted by American Archaeologists or museum curators to the classification of stone art remains, or the preponderance or scarcity or entire absence of certain specific types in different localities. At present this branch of the science is becoming one of much interest and theoretical value.

In this issue of *The Antiquarian* we present a well prepared paper on the classification of flint implements in the U. S. National Museum by its learned Curator of Prehistoric Antiquities, Dr. Thomas Wilson, that will be found of great convenience, and an important and reliable aid to collectors and students.

In the *Bulletin of the American Museum*, Vol. XIII, 896, is a more elaborate production in this line with the above title, designed to be a complete classification of all types of stone-age relics usually obtained in this country, with an extended tabular statement of their geographical distribution. This comprehensive work is based upon probably the largest and finest private archaeological collection in the United States, that of the author, Commodore Douglass, who has expended years of labor and lavish sums of money in its accumulation. It contains specimens in profusion of aboriginal art from every portion of America and is perfectly arranged, classified and catalogued. The table above named, with twenty pages of explanatory text of specific and descriptive classifications, is the fruition of much patient and careful labor, with the adjuncts of years of observation and study.

It should have a wide circulation among our archaeologists, and with that view, if found practicable, we may reprint it entire in our pages. If not, we will endeavor at the earliest opportunity, to give our readers the benefit of as full a synopsis as possible.

J. F. S.

Biblia. A Monthly Journal of Oriental Research. Meriden Conn., April, 1897.

This twenty-nine page periodical is the American organ of the Egypt Exploration Fund; the Palestine Exploration Fund and the Egyptian Research Account. Its publication is in the interest of those Funds for promoting and continuing Oriental investigations in Archaeology, Ethnology, Literature, Religion, History, Epigraphy, Geography, Languages, etc. It contains several articles interesting to those whose tastes are in the direction of Biblical history and Eastern Antiquities.

The Farmers' Institute is the title of a sixteen page monthly paper published at Mason City, Iowa, now in its eighth volume. It is always full of sprightly literary items and matter of value and interest to agriculturalists.

The Museum, a fourteen page monthly magazine, "devoted to Research in Natural Science," is published by the Museum Publishing Company at Albion, N. Y. It is well conducted and is especially adapted to collectors and general readers.

The Natural Science Journal of New Bedford, Mass., has added two more editors to its already efficient staff, namely Prof. W. A. Stearns, of Atlanta, Ga., Ornithologist, and Prof. Arthur M. Edwards, of Newark, N. J., of the Department of Microscopy. It bids fair to become a permanent and successful publication.

Canadian Natural Science News is another new candidate for popular favor. Vol. 1, No. 1, is on our table, a modest ten page pamphlet, to be published monthly at Baden, Ontario, by Edgar R. Boniface. This initial number is well printed and its contents are of the highest excellence.

The Osprey is the title of a neatly-printed, sixteen page periodical, published monthly at Galesburg, Ill., by The Osprey Company. It is edited by Walter A. Johnson, "associated with Dr. Elliott Cones of Washington, D. C.," and is devoted exclusively to the interests of ornithology. It is

beautifully illustrated with cuts of birds from paintings by Louis Agassiz Fuertes, who is said to be the equal of Audubon as a painter of birds.

The Aztecs of Ancient Mexico is the subject of a course of six lectures offered by Professor Frederick Starr, of the University of Chicago. A syllabus of these lectures is issued by the university press and may be used as an outline for studying that people. References are given to the authorities quoted, so that the student has in the syllabus a guide to the literature which he would first study. There is also a series of exercises and questions following each subject to facilitate in mastering it.

Professor Starr treats the language, mythology, picture writing, ancient manuscripts or codices, daily life, industrial arts, dress, architecture, song, music, the dance, society, government, land tenure, religion and mortuary customs.

In the May number of the Popular Science Monthly is a very interesting history of the inception, growth and condition of the Academy of Sciences of Davenport, Iowa, written by Professor Frederick Starr, of the University of Chicago. The Academy is about to publish its seventh volume of Proceedings; the sixth, already issued, being of the highest standard of ability and value to science.

James Terry is suing the American Museum of Natural History in the U. S. Circuit Court to recover \$4,612.75, with interest, which he claims as the balance due for an archaeological and ethnological collection sold by him to the Museum for \$38,000 on June 5, 1891. Of this sum he received ten installments, leaving the balance sued for.

On the part of the Museum it is alleged that some of the articles in the collection were donated to the institution through Mr. Terry as its agent, and consequently he has no right to demand payment for them. He says that he spent nearly twenty years in forming the collection, which consisted of about 26,000 different pieces.

J. F. S.

CORRESPONDENCE.

In camp near Farmington, San Juan county, New Mexico, May 4, 1897.

Editor of The Antiquarian:

Since here I have been examining the large round and square buildings up Chaco Canon. In some of the ground rooms, graves have been dug below the floors and bodies placed therein, together with pottery, mats, wooden implements, etc. Within a space of three miles there are more than thirty ruins, ranging from one containing several hundred rooms, down to two and three compartment structures. I have never seen pottery fragments, mortars, metates, etc., so numerous upon the surface. There are wagonloads of them.

How the builders existed I am unable to understand, for there is scarcely any water to be found today. Our party experiences great difficulty in securing even sufficient for cooking purposes.

WARREN K. MOOREHEAD.

A PREHISTORIC TOMB.

In the fall of 1875 my attention was called to a very singularly constructed and interesting mound on the farm of G. W. Cole. One of the farm hands, while plowing over a low mound in a field near Pond Creek, the point of his plow caught on quite a large stone, which impeded his progress. In removing the stone, which stood on end at an angle of about 45, he discovered another next to it in about the same position. In removing this, another was found, and another, until he had unearthed about a wagonload of the stones, when a cavity or vault was discovered. In this vault was found ashes, some fragments of stone and flint and a few pieces of burnt bone. This mound I visited the next day and found enough of the stone in position to enable me to form an idea of the manner in which it was constructed. I examined what bones were left and judged them to be human bones. The vault was constructed of stone about 18 inches long, 12 inches wide and 2 inches thick. The first tier of stone on each side, which formed the cavity, were placed on end about 18 inches apart and leaned together at the top so as to form a vault prismatic in shape about 6

feet long. Then tier after tier of stone were placed in like manner against each other until the whole arrangement was 6 or 7 feet square. The inner side of the first tier of stone showed evidence of having been subjected to a great degree of heat. But on the one side or top of the deposit of stone there were no signs of fire. From appearances I should judge that the body for cremation was placed in the vault and then fired until all was consumed and then the whole was covered with earth. This mound was about three feet high and 20 feet broad at the base. The nearest point at which stone of the size used could have been obtained is about one-third of a mile from the mound.

Barnesville, O., May, 1897. WILLARD B. DOBBINS.

Editor of Antiquarian:

The April number of The Antiquarian has arrived. Was pleased with its appearance and contents. I fear that I did not give prominence enough in my article to the "game" theory. That is the real purpose, I believe, for which the "plummets" were used. In your editorial you state that my theory "lacks convincing evidence." My dear sir, is that not true of all the other theories? The fact that plummets are not battered or broken is no refutation whatever. If they threw the missile at a mark, perhaps a circle on the ground, they would not be likely to choose the surface of a rock for that mark, but rather a spot on the sod. Some few of them are battered, however, but that does not prove my theory. I have talked with Professor Starr with regard to my "game-missile" theory and he seems to consider it fully as plausible as any of the theories advanced. As to the labor in polishing and shaping—I have specimens of axes of hard material bearing as high a finish or polish as any plummet I ever saw. According to your views they could not be used as axes on account of the work involved. They must have some use or purpose, and until we find something better I must continue to believe that my "game-missile" idea is a little nearer the mark than either of the others (eight in number). It has evidence, if not "convincing evidence," and in this it stands as strong as the ceremonial or plummet. Common beach pebbles would not serve the purpose

better nor as well, because they would not be true in their flight. As well say that any rough stick would serve the purpose of an arrow-shaft. I did not enlarge on the subject in my article on account of economy of space. I expected criticism and thank you for your editorial comment. Joliet, Ill., May 14, 1897. F. M. MUHLIG.

A BURIAL OF PREHISTORIC MAN.
SOUTHWESTERN PENNSYLVANIA.

A careful study of the modes of burial will doubtless aid much in determining the migrations of prehistoric man. Different waves of population have swept over the country between the Monongahela and the Ohio rivers. Among the facts leading to this conclusion, none are of more weight than those gleaned from the study of prehistoric burials here. A few years ago I was told that a human skull had been found in a stone-pile one mile northeast of Carmichaels, Pa. Getting permission of Mr. James Gregg, the owner, I proceeded to examine further.

A regular stone cairn was found. It was about ten feet in diameter and four and one-half feet high. It stood on the point of a knoll which projects nearly to a branch of Muddy creek. While searching for the skeleton of the skull taken, five other skulls were found. They had not been placed in one plane, but in different elevations; some above others. The feet were not in the same direction, but the general direction was to the southeast.

Five of these were remains of persons of large stature. The other was that of a woman or youth. The indications were that these bodies had been placed there at different times. After the body had been placed in the position to remain, which was on the back at full length, flat stones were taken, and beginning at the feet, they were set leaning toward one another over the body. These were regularly placed, each over-lapping the preceding one on the same side; these two series of stones extending around and covering, in an arch-shaped cyst, the entire body. These series of stones inclined to each other at an angle of about forty-five degrees. The stones were larger about the chest and touched one

another along the crest. Over and about these were other stones, placed irregularly. Each cyst was similar to the others.

Charcoal and fragments of muscle shells were found miscellaneously scattered throughout the entire cairn. No implements were found. Below the feet of most of the bodies an excavation had been made in the natural surface of the soil. Its dimensions were about four feet long, two feet wide and six inches deep. The sides and ends of this were lined with flat stones standing vertically. The bottom was lined with smaller flat stones, lying on the side, each over-lapping others like the shingles of a roof. They showed clearly the order in which they were placed.

During July, 1896, a stone cairn was examined by me on the farm of Mr. Charles Adamson, three miles west of Waynesburg. Two stone cysts similar to those described were found. Near these was a circular arrangement of successive rings of flat stones overlapping one another, as before stated. Between these stones and the graves was a level, smooth pavement, about six feet long and one foot wide. Of the many graves examined by me, this form occurs second in numbers.

A. J. WAYCHOFF.

Waynesburg, Pa.

INVESTIGATION OF AN OLD INDIAN VILLAGE SITE.

The valley, situated in Northampton county, Pa., between what is known as Sailor's hill on the south, and Morgan's hill on the north, is beyond doubt the site of a village and hunting ground of a once numerous and industrious tribe of Indians. We think they were numerous on account of the large number of implements found in the vicinity, and industrious on account of the different materials from which these implements were made and the workmanship of the same.

Situated as they were, on the banks of the Delaware river, from which they could obtain fish in sufficient quantities for their use; surrounded on the other three sides by high hills abounding with game, and with a spring of fresh water right in the village, they were ready to withstand fam-

ine, cold, droughts, or even attacks of hostile neighbors for a considerable length of time.

It is indeed interesting to study the different materials from which their implements were made and the localities from which these materials were transported. By far the greater number of arrows were made of jasper, which was obtained from the jasper quarries near Durham, whose discovery and history we owe to the untiring efforts of that able and distinguished geologist and archaeologist, Mr. Charles Laubach, of Durham, Pa.

How the jasper was transported from Durham to the village, a distance of about five miles, is a question; but that it was transported is a certainty, for we have sufficient evidence to show that the implements were manufactured in the village. It is also a well known fact that implements of jasper were not manufactured at the quarries, as there have been but very few finished specimens found near them. The writer himself is in possession of an arrow, one of the few that were found near the quarries, and of which he is very proud on account of the scarcity of finished arrows found in that vicinity.

There are also a great many arrows, made of argillite, found, the material for which must have been carried from Bucks county, Pa., and manufactured here, as there are chips scattered around in profusion.

The writer has also an arrow made of slate, found on the site of the village, showing that these Indians traded with those in the slate region in the northern part of Northampton county, a distance of about twenty-five miles; also an arrow made of coal, which must have been made for an experiment or as an ornament, because it would not be of any use to kill game on account of its soft nature, but it will help to prove the industry of these Indians, who must have obtained it from the Indians in the coal regions, a distance of over fifty miles. It is also possible that the arrow might have been brought here by the Indians from the coal region during a time of war and shot into the camp, but it is not probable, because they always used arrows made of harder material for such occasions. The axes and hatchets used by these Indians differ very little in structure from

those found in other localities, and are generally made from the "Glacial Gravel," which abound in this region. A very pretty axe was found at some distance from the site of this village, made of granite, which was obtained from one of the granite boulders along the south side of Sailor's hill.

Insignia or banner stones have been found, nearly all of which are of the same shape, some being perforated and some are not.

Hammer-stones can be obtained in almost any quantity; some have a hole worn in one side and some in both sides, while others show signs of use on the entire surface.

Some excellent specimens of lapstones have been found with holes from one inch to four inches in diameter and about an inch in depth, weighing from two pounds to fifteen pounds. A small pendant or ornamental stone, made of slate, diamond shape, with a small perforation in the end, was found in the center of the village.

Netsinkers of different shapes and varying from one or two ounces in weight to two pounds, have been found scattered around. Also pieces of pestles, pottery and other implements may be found.

That this is an interesting field on which to work can be surmised by the foregoing report, which does not by any means describe all the different implements found, but for want of time and space we will defer until another time.

It has lately been discovered that on the top of Morgan's hill, on a small plateau overlooking the village just described, lived another tribe, or a part of the same tribe, but of which we know very little as yet for the reason that the writer did not discover the fact until late in the winter, when the weather was such as to make it unfit for outdoor investigation. But we hope that during the coming summer we will be able to investigate and make a report in full. Hoping this lengthy article will find favor in the eyes of the Archaeologists and others interested in the study of the primitive inhabitants of the Delaware valley, I submit it to the readers of *The Antiquarian*.

HARRY J. IVEY.

Raubsville, Pa., April 25, 1897.

IN THE FIELD.

Mr. Clarence B. Moore, of Philadelphia, who has carried on most complete explorations in the sand mounds of the St. John's river, Florida, publishing his results in a number of memoirs in the *Journal of the Philadelphia Academy of Science*, has continued his work North into Georgia. In the mounds of this new scene of his investigations, he has discovered a number of urn burials. Specimens of these urns, which are very much like some of those figured by Jones in his *Southern Indians*, have been sent to the Peabody Museum of Harvard University. The American Museum of Natural History, through the kindness of Mr. Moore, has also been the recipient of an urn with the bowl, which was found inverted over it as a cover.

(In the *Smithsonian Annual Report for 1890*, page 609, et seq., will be found an illustrated description of this mode of interment by Georgia aborigines, under the caption, "A Primitive Urn Burial," written by the editor of this journal.)

A stone grave, containing the skeleton of an Indian, was recently opened near Cairo, Ill., by a benighted Egyptian, who reports:

"The bones had the peculiar red tint which distinguishes them from those of the white race. In the grave were numerous arrow-heads, broken pottery, pipes, etc. These were marked with peculiar hieroglyphics."

The bones of Indians found in stone graves have no tint or color that distinguishes them from the bones of any other race; and the Indians who buried their dead in those stone graves knew no more of hieroglyphics than they did of the integral calculus.

There is in Chicago one of the five oldest small boats known to exist in the world. It has just come from the Gizeh Museum of Antiquities, at Cairo. To the generosity of Mrs. Cyrus McCormick the Field Columbian Museum is indebted for a rare gift. E. E. Ayer learned in the course of his search for interesting things in Cairo last winter that there had been placed in the Gizeh Museum three boats of marvelous age and curious design. Investigation proved that the boats were indeed of the

rarest value, for never before in archaeological history had there been discovered anything of the kind which approached these Loats in age and interest. A Viking craft found in Norway some time ago was in use in about the year 1000 A. D., and at once became famous as by far the oldest specimen of water craft in existence. The boats in the Gizeh Museum, it was decided by the learned ones, were used at least 4,500 years ago, and were contemporaneous with the Dashur pyramids of the eleventh Egyptian dynasty, so says the *Chicago Journal*.

With this boat, which will be installed in the museum, and the two which remain in the Cairo museum, were two more, which still rest in the sands which stretch desolately from the Dashur pyramids.

The five boats were found buried at a considerable depth not far from the famous largest pyramid, and in such orderly form and with such mathematical relationship to the great pile of stone that it was evident that they had been buried with design at that particular spot.

The boats were found to be alike in the material of which they were constructed and in their general dimensions. The cedar of antiquity, which entered into so much of the construction of things of wood was used for building these boats. While the equipments of the boats had generally disappeared with time, the edges and ends were ragged and little warped, their shapely outlines still remained so rigidly in evidence that the modeler's skill in giving grace and shapeliness was evident. The boat that is in Chicago now was probably better preserved than any. It is thirty feet long, eight feet of beam and four feet of hold. It had been propelled, of course, by oars, but the points of contact for the oars were not in evidence. A well-preserved and peculiarly marked and designed piece of rudder of wood was found near the boats.

From the design and decoration of these boats, it is presumed they were in distinguished use, such as for the transportation of spices, perfumes and offerings of the nature that were carried to the resting place of the royal dead in the pyramids.

THE ANTIQUARIAN.

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SANDALS OF THE AMERICAN ABORIGINES.*

Passing the moccasin, the student arrives at the land of the sandal, just on the southern boundary of Colorado and Utah. Here he encounters two radically different types of sandals; the one now in common use throughout Latin America, having, as in Japan, a single toe string between the first and the second toe, and the older, aboriginal, and now quite disused type having a toe loop or two toe strings, one between 1 and 2, the other between 3 and 4.

The sole of the Cliff Dweller's, the Utah man's, the New Mexican mound and cave man's sandal, as may be seen by the plate, is of vegetable fiber, Indian hemp (Apocynum), yucca of many species, and henequen sisal or agave (Ixtli).

For the most part, they are rights and lefts, but not a few of them that are built on a warp are quadrilateral. In texture they are either in corded weaving, with warp and weft variously treated; or if the material be coarser, they are in wickerwork, or they are plaited or woven diagonally, but one and all have a toe loop or string that pierces the sole in two places and passes up between toes 1 and 2, and 3 and 1. This forms the basis of a lacing, and is variously treated, but a description of the figures will make the matter perfectly plain.

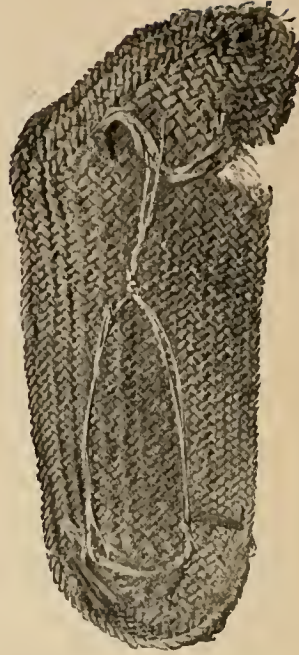
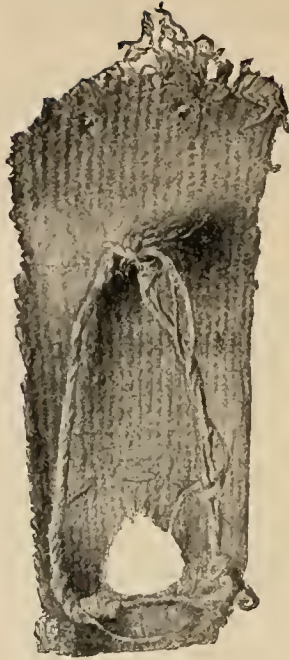
Figure 1 (upper left) of the plate is from a Cliff Dwelling in Arizona (Cat. No. 13,014, Museum of the University of Pennsylvania). The warp and weft are of a fiber strongly resembling that of Apocynum Cannabinum. The weft is finely spun, laid close, colored in narrow stripes, and on the

under side the meshes are caught into a continuous loop or coil of coarser thread, making that part more durable. At the front the projecting ends of the warp are concealed in a continuous braiding of a single thong of buckskin. Two perforations show where the toe loop came through. Unfortunately, this part is wanting, but the rest of the lacing down to the ankle loops and up over the heel, returning to the knot on the instep, make the whole treatment plain.

In the collection of Mrs. T. T. Childs, of Washington, is a sandal woven in wicker pattern from a two-ply twine of Apocynum. The heel strap and lacing are administered precisely as in Fig. 1, but the loop in front, of agave fiber twined, seems to have included the first and second toes. This is an uncommon form of toe loop. The under side of this sandal also is worthy of study, for the weaver has tied single knots in her cord all around the under margin, and also at proper places under the heel and under the ball of the foot where the strain would come. This ingenious device stands for the hob-nails in peasants' shoes of more advanced peoples. The selvage of the Childs specimen is formed by an ingenious turning-in of the twines in the course of the weaving or plaiting. A woven heel also is somewhat turned up.

Fig. 2 (upper right) is from a Cliff Dwelling in Arizona (Cat. No. 13,015, Museum of the University of Pennsylvania), and is perfect in all its parts, which are four—the sole, the toe loop, the heel loop and the lacing. The sole is of yucca leaf (*Yucca Angustifolia*), woven or plaited diagonally, and needs no explanation. The toe loop is a separate part, gathered at its ends into the texture of the sole, and is double. The

*The plate illustrating this paper and descriptions of the figures are reprinted from the author's "Primitive Travel and Transportation" forming part of the Report of the U. S. National Museum for 1894.



heel loop is precisely like it, caught into the margin under the ankles and hooked over the heel. The lacing starts from the instep, and from this point makes three loops, to-wit, about the toe string and about each side of the heel string, returning to the starting point, where it is knotted.

Fig. 3 (lower left) is of yucca fiber, coarsely plaited, from a cave near Silver City, New Mexico (Cat. No. 45,609, U. S. N. M.). All the lacing above is in one continuous string, starting on the back of the toes, passing down through the sole, and up, where a single knot is tied. The long end then makes an excursion to the ankle loops and around the heel, coming back to the single knot over the toes, where an additional square knot is tied. The treatment at the heel cannot be made out, owing to the torn condition of the specimen.

Fig. 4, from a Cliff Dwelling in Arizona (Cat. No. 13,016, Museum of the University of Pennsylvania), is of shredded yucca fiber. The under side shows the structure better. There is a warp of four ropes, and the weft is woven into this like wicker, all the loose ends being purposely left long on top to afford a soft bed for the foot. The great majority of Japanese straw sandals happen to be woven in precisely the same manner, only in Japan the loose ends are cut off underneath. All the lacing is gone from this splendid specimen save the well-defined toe loop.

In studying a large collection of shoes in the National Museum, in Cambridge, New York and Philadelphia, I discovered, first, that the sandal with a single string between the first and second toe, found in various parts of Latin America, is an intrusion, and whenever one of them is discovered in a cemetery, as at Ancon, Peru, it always belongs to post-contact times. This same sandal originally seems to have belonged to the brunette Caucasian and to the Tartar people. It was worn by the Romans and the Greeks, the Semites and Hamites, and has been spread by Mohammedans throughout Africa and parts of Asia. The interesting facts, however, are that this same footgear, together with the stilted sandal and the divided stocking, also occurs universally in Japan, but not in Korea, China or Manchuria.

Heinrich Winckler has lately shown that the Japanese language has Tartar elements,

and this statement of his is confirmed by me by the fact that the Japanese sandal also is borrowed from western Asia. In America, the Eskimo wears a boot; the northern tribes wear high moccasins or gaiters; the tribes of the United States east of the coast range, wear low moccasins; the coast tribes from Alaska southward, living under the influence of the warm currents of the Pacific, go barefooted to a large extent. In the arid region of the United States, extending from Utah to the Mexican boundary, sandals were worn as defense against rocks and thorny plants, and their use extends from that area southward to the confines of Chile. The most rude type is simply a piece of rawhide slashed around the margin and drawn up and around the foot in the form of a dish. When dry this shoe preserves the form of the foot. The second type, and the most interesting, is generally woven from vegetable fiber. In every example that I have seen, in place of the single toe string, there is a loop, or there are two strings which enclose the second and the third toe. This was universal in aboriginal times, and on every piece of pottery, and on every statue that I have examined the same form of sandal occurs.

Now, the Cliff Dwellers are to me the most interesting of the southwestern people because no example of the single toe string has yet been seen by me from a Cliff Dwelling, and I have inquired of the Curators of the other great museums in the United States, each one of whom assures me that he has not in his collection a sandal from the Cliff Dwellers made on this Old World type.

I have discovered the true difference between the American sandal and the European introductions. This discovery was not made in the so-called uncontaminated cemetery at Ancon, Peru, because the burials there were decidedly mixed; that is, there are ancient bodies, bodies deposited at the time of the Conquest, and burials of very much more recent times, in one of which a page of a Spanish book, printed in the seventeenth century, was unearched. My sandals are from Arizona and Utah in the Cliff Dwellings, from which no one has ever taken a single specimen showing contact with the white man.

BOBBIN OR SPOOL-SHAPED IMPLEMENTS.

The writer wishes to direct the attention of the readers of *The Antiquarian* to a class of very curious and interesting oval-shaped, longitudinally perforated and elaborately decorated objects, called because of their form "Spools or Bobbins." The greater number of them so far discovered are made from stone. A few of clay have also been found, notably in Florida. While they appear to be more numerous in America, far-away Europe has also produced them. This simplicity of form from both hemispheres causes Mr. Thomas Wilson, Curator of the Department of Prehistoric Anthropology, U.S. National Museum, Washington, D. C., to say on page 975, of his great and admirable work, "The Swastika*": "We have already seen how an increase in the number of correspondences between objects from distant countries increases the weight of their evidence in favor of contact or communication between the peoples. If it should be found upon comparison that the bobbins on which thread is to be wound * * * had been in use during prehistoric times in two hemispheres, it would add to the evidence of contact or communication." He also tells us that the United States National Museum contains a series of these objects from Europe, numbering about a dozen, one found at Corento and the remainder picked up at Bologna, in Italy. He figures two of them in his work. One of them is without decoration. The smaller has engraved upon each end three parallel, dotted incisions, so as to form a cross of Greek design.

From what he says above it is manifest that he believes they were used in the art of weaving. He further says, page 977: "Related to the bobbins is the art of weaving and it is perfectly susceptible of demonstration that this art was practiced in the two hemispheres in prehistoric times. Woven fabrics have been found in the Swiss lake dwellings, in Scandinavia, and in nearly all parts of Europe. They belonged to the

* The writer has before him the Smithsonian Rep. of the U. S. National Museum, in which the above work is incorporated, from which he quotes.

Neolithic and Bronze ages." Remains of textile art have been taken from mounds and graves in the United States and the objects to be figured and described later on were, perhaps, as he says, often used in the manufacture of cloth. Not all archaeologists believe as does Mr. Wilson. Mr. Gerard Fowke, in his paper on "Stone Art," to be found in the "Thirteenth Annual Report of the Bureau of Ethnology, Washington, D. C., p. 125, says: "Relics of spool-shaped, probably ornamental, rather than industrially useful, are not uncommon in copper, though very rare in stone." He figures one of these objects, which is without ornamentation, is made of sandstone, and was found with a similar implement, marked with copper stains, with two skeletons found lying face downward in opposite directions. With it were also found a shell pin and a pipe of clay*. In the collection of American antiquities belonging to the University of the State of Ohio, at Columbus, are a few of these rare and pretty implements. The figures produced below show the form and ornamentation

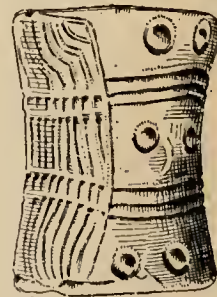


FIG. 1.

tation of one of them, and of several in the collection of J. W. Tweed of Ripley, Ohio. Fig. 1 is made of a fine-grained sandstone, and nicely polished. Both ends are slightly defaced, not enough, however, to destroy any of the lines. It is about one and three-quarter inches high, and its greatest diameter at each of the oval ends is about the same in measurement. Its perforation, which is in the direction of its length, measures in diameter about three-eighths of an inch. On one of the ends is to be seen the form of a Greek cross, two wings of which are

composed of five, unevenly-placed, incised lines, while the remaining wings have but

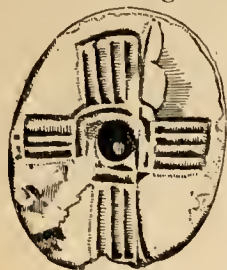


FIG. 2

4 of these lines similarly placed (Fig. 2). The hole is in the center of the cross, around which are carved lines to form two quadrangles, one within the other. From the perforation at the opposite end, extending to the periphery of the bobbin are cut into it on two sides, two triangles, about seven-eighths of an inch long, of scalene form, inside of which are engraved in the one, six horizontal lines, and seven in the

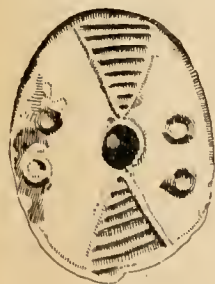


FIG. 3

other, extending from base to apex, as seen in Figure 3. The remaining space on each side of the aperture contains two small rings or circles, in the center of which is a minute projection. The rings are placed opposite the perforation, but at unequal distances.

One of the sides of the bobbin is covered with zigzag lines, so engraved as to form a St. Andrew's cross, which extends to both ends of the object. Around it, without a break, extend four lines, two of which are placed near to each other. On the opposite face is added an extra line which, with the others, are zig-zag. Cut into one end are five circles; in the center are five similar rings, and at the opposite end six

are to be seen. They are all about one-eighth of an inch in diameter, and have the usual protruberance. The decoration covering the object is nicely executed. It was found near Tranquility, Adams County, Ohio, by Dr. Gaston, about 1875.

Others in the museum of the University are also prettily decorated, but of different patterns. Not alone did the aborigine decorate his person and that which was worn by him, but even his implements and ornaments came in for their share of his æsthetic work.

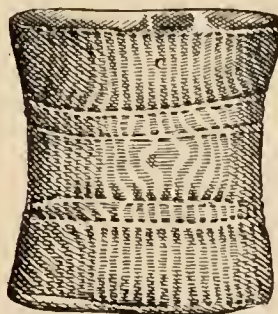


FIG. 4—J. W. TWEED COLLECTION.

In connection with these so-called spools or bobbins may be mentioned the class of curious top or cone-shaped implements, made of stone, and more often of terra-cotta. They, too, are perforated, those of clay being hollow, often having inside of them a little ball of the same material. Of these, two nicely adorned are in the writer's collection. They are very often prettily decorated and are called whorls. Upon many of them have been placed the cross in the form of the Swastika, Greek or St. Andrew's. Dr. Schlieman found many of them in his excavations at Troy, and in his interesting and learned work, "Troy and Its Remains," figures many on twenty-nine plates. Dr. Wilson shows many of them in his work before alluded to, which were obtained from the Swiss lake dwellings, Sweden and Italy, made from stone and terra-cotta and perforated. Some of them are quite plain, while others, especially those from Italy, show much decoration; also from Mexico, Nicaragua and Colombia, South America. Those owned by the

writer were all found in Colombia. These whorls are mentioned in this paper because it is believed they, with the bobbin-shaped objects, were used in spinning and weaving, and the writer again quotes Dr. Wilson, who, in his great work before mentioned, says on p. 966: "These are essentially prehistoric utensils, and are to be found in every part of the world where the inhabitants were sufficiently cultured to make twisted thread or cords, whether for hunting or fishing, games, textile fabrics or coverings, either for themselves, their tents, or other purposes. In western Asia, all of Europe, in the pueblos of North America, and among the aborigines—by whatever name they were called—of Mexico, Central America and the north and west coast of South America, wherever the aborigines employed cord, cloth or fiber,



FIG. 5—J. W. TWEED COLLECTION.

the spindle whorl is found. It was equally in use in Europe and Asia during the Neolithic, as in the Bronze age. It continued in use among the peasants in remote and outlying districts into modern times. During the Neolithic or polished stone age its materials were stone and terra-cotta; during the Bronze age they were almost exclusively terra-cotta. Recently a Gallo-Roman tomb was opened at Clermont-Ferrand and found to contain the skeleton of a young woman, and with her spindles and whorls. The existence of spindle-whorls

in distant and widely-separated countries affords a certain amount of presumptive evidence of migrations of peoples from one country to another, or of contact or communication between them. If the people did not themselves migrate and settle the new country, taking the spindle-whorls and other objects with them, then the spindle-whorl itself, or the knowledge of how to make and use it, must in some other way have gotten over to the new country."

This argument of migration, contact or communication does not rest solely on the similarity of the whorls in the distant countries, but equally on the fact of spinning thread from the fiber; and this argument is re-enforced by the similarity of the operation and of the tool or machine with which it was done. It has been said elsewhere that the probability of communication between widely-separated peoples by migration or contact depended for its value as evidence, in some degree, upon the correspondence or similarity of the object considered, and that this value increased with the number of items of correspondence, the closeness of similarity, the extent of the occurrence, and the difficulty of its performance.

A. F. BERLIN.

Allentown, Pa.

The Channel Islands, off the Santa Barbara coast of California, that are little more than bleak patches of rock and sand, are marvelously rich in Archaeological and Ethnological remains of the peculiar tribe, or tribes, of Indians who inhabited them as recently as sixty years ago. Their custom seems to have been to bury with the dead, or deposit on the grave, all the earthly possessions of the deceased, with profuse offerings bestowed by relatives and friends. A party of scientists in the interest of Harvard and Leland Stanford, Jr., Universities, have been for two or three months making a thorough exploration of the Islands with very satisfactory results.

HIDERY-GUILL-RHAY, OR INDIAN TOBACCO.

Up to about 1877, from far down in the dim and distant past, the Indian tribes of northern British Columbia and southern Alaska, I have reasons for believing, used as a stimulant what was known to civilization as "Indian tobacco." Its use appears to have been discontinued by the mainland tribes long before it was amongst the Hidas of Queen Charlotte's Island. Our tobacco took its place among all the tribes in time because it could be had already prepared, whereas, with the Indian article a deal of labor was necessary before it was fit for use.

This substance, although named tobacco, was not made from that plant at all; but from the seeds of a certain tree or plant, and lime, mixed together in certain proportions and pounded into a paste in a mortar. When ready for use a piece was taken and rolled between the hands until the shape and size of a boy's marble. When used, it was sometimes chewed, but oftener kept inside the cheek of the person using it. It was quite a narcotic, and had the same effect on the system as that produced by tobacco.

When in use certain persons grew it and sold it to others. The last individual to grow it and use it was an old woman who died at Gumsherd, Queen Charlotte's Island, B. C., about the year 1877.

The lime they used was generally made of sea shells, burned and then pounded in a mortar until reduced to a powder. The seeds or nuts having been rubbed into a paste, the lime powder was added, and the whole mass again pounded until thoroughly mixed.

The species of tree or plant that produced these seeds or nuts seems to be lost beyond recovery. The tree produced a nut or ball like that of the poppy, which was full of seeds. The Malays use the seeds of the Beetel nut, pounded into a paste mixed with lime, which they use in the same manner as this is used by our Hidas, by chewing or simply keeping in the mouth between the teeth and the cheek. Whether it was the Beetel nuts or poppy seeds that our Indians used, I cannot say. The fol-

lowing fact appears to favor the opinion that it was the latter. A friend of mine, Mr. R. H. Hall, of the Hudson Bay Company's service, attempting to discover the identity of the plant that bore the seeds used, drew a picture of the poppy plant with its leaves, flowers and seed-balls shown, and this he asked an old Indian woman to look at and see if she knew what it was. As soon as she saw it she said she recognized it as the Indian tobacco plant. In 1894 I tried a similar experiment, but with different result. I found a poppy in full bloom in an old garden, and showed it also to an old Indian woman, asking her if that was the Indian tobacco plant. She answered at once: "No; that is only a poppy."

The following is its traditional history presented by the natives here. Before the Indians came to the Islands of Queen Charlotte's Sound, their country was far to the north and west, in or near to Alaska. There the climate was warm and guill-rhay plant grew to be a tall tree which they had to climb in order to obtain its seeds or nuts for use. After living there for many years, for some reason not given in this account, they all moved further south in Alaska. In the hurry and confusion of the removal they forgot to secure a supply of the guill-rhay seeds to the very last. In order then to continue a supply of this very important article a boy, or young man, with his bow and arrows, shot down a number of the balls from a tree; and these they planted at their new abode in Alaska, and then on the Queen Charlotte's Islands.

Owing to the climatic changes this tree, from being tall and large, became a mere shrub long before it ceased to be cultivated. Such is the tradition. The question now is, What then was this plant? Was it a poppy; or was it a Beetel nut? If the latter, it is very strange how people so widely separated as are the Malays and the Hidas should have the same plant and use its seeds in the same manner.

While recently classifying a collection of curios, I noticed four little stone mortars, in each of which was a white substance adhering to its bottom. Scraping this out with my knife, I tested it with nitric acid and found it to be lime. These mortars were some of the antiquities belonging to

the older Hidas of Queen Charlotte's Islands.

During the greater part of 1869 and 1870 I resided there among those Indians and have seen them using this so-called Indian

tobacco; and am now very sorry that I did not at that time become more interested in it and learn more of its nature and history.

JAMES DEANS.

Victoria, B. C.

EFFIGY MOUNDS NEAR ROCKFORD, ILLINOIS.

I think on Section 16 it is, in New Milford township, of Winnebago county, Ill., are situated two effigy mounds that I do not remember to have seen described in print. They are on the sandy, loam soil of the Rock river bottom, a hundred rods south of that beautiful and historic stream, and five miles south of the city of Rockford. The average height of the level bottom here is, I should say, thirty feet above the level of the river at the ordinary stage of water. Some forty rods northeast of these mounds the early Indians once cultivated an extensive corn field, in which I have found many of their relics, such as stone axes, hoes, arrow points, drills, knives, etc. Many pieces of lead ore and native copper have also been picked up there. Still farther to the northeast, about eighty rods, is the site of another of their corn fields, from which, in a spot not more than half an acre in extent, I have found nearly four hundred flint war points, all surface finds. This large number of arrow points were, with the exception of perhaps half a dozen, uniform in shape and material and were evidently manufactured there, as the ground around was littered with the same kind of flint. From this place I also recovered many fragments of lead ore, several pieces of hammered copper, fifty or more hammer-stones, besides several celts, drills and perforators, and a silver buckle, probably lost there by the Indians of the more recent iron age.

But, to return to the emblematic mounds, the accompanying cut well illustrates their form and relative positions. No. 2, the largest one, is 192 feet long, the body being 77 feet, and the tail 115 feet in extreme length. In front, from one fore foot to the other, is 62 feet; and the hind feet stretch from each other a distance of 60 feet. Across the body, just behind the front legs,

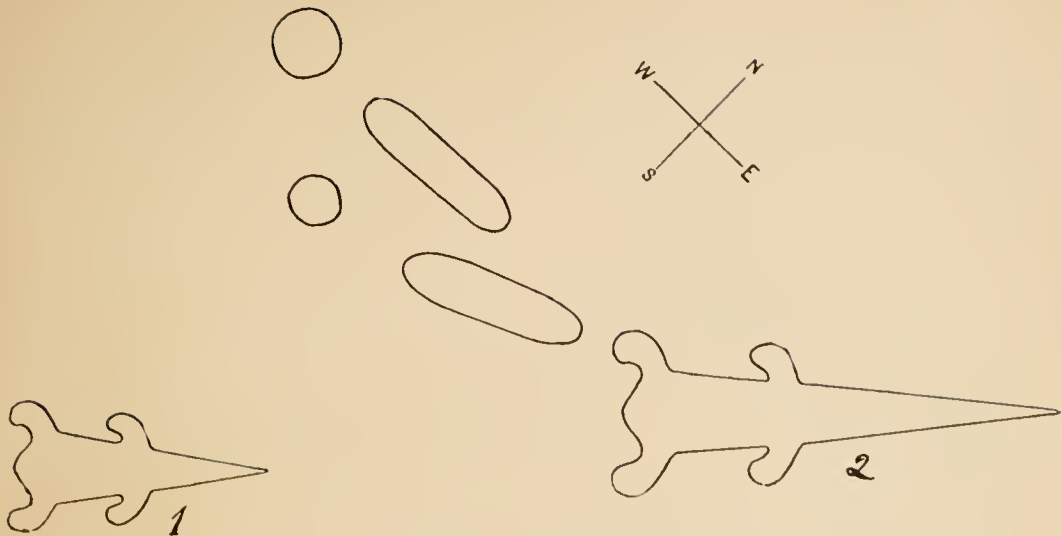
the effigy is 30 feet wide and 25 feet in width at the attachment of the hind legs. The elevation of the figure above the general surface of the ground is at the shoulders five feet, gradually tapering to nothing at the end of the tail. Each foot is seventeen feet in diameter at its broadest part.

The smaller mound, No. 1, measures 110 ft. in length. Its front paws are 55 ft. apart, and the hind ones 57 feet. Its body, at the junction of the front legs, is 30 feet wide, and in length 60 feet, the tail being 50 feet long. Its feet are fourteen feet in diameter; and its elevation the same as No. 2, five feet high at head, tapering down to the ground at the tip of the tail. They are headed in the same direction, to the southwest, the smaller one ten rods southwest of the other. West of No. 2 are four ordinary mounds, as shown in the cut, two oblong and two circular in shape, no doubt contemporaneous with, and thrown up by, the same Indians who built the effigies. None of them have been explored.



Jar from near the Effigy Mounds.

Fragments of pottery ware are very common here about the old fields and village sites, but very few entire vessels have ever been recovered. This spring, after the freshets had laid open an ancient Indian grave, I found the upper half of a large, finely-finished jar; the water having carried away the lower part of it. Across the



Effigy Mounds near Rockford, Illinois.

top it measures eight and a half inches, and in depth it must have been fully eleven or twelve inches. It was badly broken, but by patient work I succeeded in restoring it as represented in the accompanying cut. Its style of ornamentation is somewhat peculiar, having its surface all over corrugated or roughened, and only embellished by the indented scallops around the mouth, and the succession of very regularly curved lines, also indented to the depth of the sixteenth of an inch, and three-sixteenths of an inch in width.

GEORGE STEVENS

Kishwaukee, Ill.

Note. The foregoing paper of Mr. Stevens, descriptive of the two remarkable totemic mounds, will be enhanced in interest by the following reference to the Antiquities of Winnebago County, Illinois, in Vol. V, of the Illinois Geological Survey Reports, written by Hon. James Shaw then Assistant State Geologist and now judge of the Mt. Carroll (Ills.) Circuit Court: "But the most common objects of interest to the Antiquarian are the mounds, in common speech, thought to be of Indian origin. The mound-builders, whoever they were, once swarmed in these valleys and woodlands, sat down upon every picturesque spot along the streams, and left their mound-built structures as memorial monuments of their busy lives. We shall not, in this place, discuss their age or their origin, but simply describe some of

the most prominent ones noticed in this county. They do not belong to its geology, but they are matters of great interest to thoughtful men. The antiquarian and archaeologist, if not geologist, are laboring in a field close bordering upon the domain of that earth-delving science.

Three classes of these mounds were noticed and examined. There was the common round mound, from ten to fifteen feet in diameter, and from two and a half to five feet high. Mounds of this description are very numerous. There is a large group of them on the banks of the Rock river, six or seven miles below Rockford. At many other places along this stream they exist in scattered groups. On the north bank of the river, within the city limits of Rockford, and a short distance above the bridge on Main street, several large ones are preserved in private grounds of citizens. But the locality where they are met with in greatest numbers is on the banks of the Kishwaukee, in the southeastern part of the county, near the confluence of the two streams of that name. Scores of them are scattered about here, and scores more have been nearly obliterated by the sacrilegious ploughshares of the white man. The oblong-shaped mound is of much rarer occurrence. At the locality in Rockford already alluded to, there is a very remarkable one. It is one hundred and thirty feet long, about twelve feet wide at the base, and three or four feet high.

Near by this one is a mound of the third class, or those having a fanciful resemblance to some form of animal life. In Rockford it is known as the "Turtle Mound." But it resembles an alligator with its head cut off more than it does a turtle. We give its dimensions: Whole length, one hundred and fifty feet; width, opposite forelegs, fifty feet; width, opposite hind legs, thirty-nine feet; length of tail, from a point opposite hind legs to end of tail, one hundred and two feet; length, from a point opposite hind to a point opposite fore legs, thirty-three feet; distance from opposite fore legs to where neck should begin, fifteen feet.

These measurements were not made with exactness, but are simply paced-off guesses. The figure lies up and down the river, on a line almost north and south, the tail extending northward. The body rises into a mound as high as a standing man. The feet and tail gradually extend into a green sward, growing less distinct and undefinable, until they cannot be distinguished from the surrounding sod. The measurements across the body at the legs include those appendages, which are only a few feet long.

The effigy, whether of alligator, lizard or turtle, seems to be headless, and no depression in the surrounding soil would indicate that the materials out of which it is constructed were obtained in its immediate vicinity.

It is a curious structure, and one would like to know its true history as he looks upon its partially defaced form. What were its uses, and who builded its uncouth animal proportions, may be better answered by the researches of the antiquarians than by the speculations of the geologist."

(We venture the suggestion, in explanation of the headless appearance of this class of totem effigies, that the structure intended to represent the head of the reptile may have been constructed of wood and bark, or other perishable materials, and served perhaps as the council house or temporary repository of the dead, of the gems, or for the residence of its chief or principal medicine man.

Editor.)

THE HOPEWELL GROUP.

WARREN KING MOOREHEAD.

(Continued.)

Mr. W. H. Holmes, of the Field Columbian Museum, and Dr. Thomas Wilson, of the Smithsonian Institution, both visited Camp Hopewell before the disks were shipped, and expressed their surprise at the importance and extent of the discovery. Both gentlemen have made a special study of the flaking and chipping of implements, and gave it as their opinion that many thousands of the nodules were broken and partially worked in order to produce the 8,000 disks. Mr. Holmes stated that four in five nodules contained flaws or seams which would render the fashioning of perfect disks an impossibility.

The finely chipped circular disk shown in the upper part of Fig. VII (to the left of the shouldered spear head) was undoubtedly a finished implement, but we question whether the great majority of the disks are complete.

We think the mound to have been a place of storage, where the natives living within the enclosure kept material to be subsequently worked into implements. Flint freshly taken from the earth is much more easily worked than that which has been lying exposed to the air for a long time. The aborigines were undoubtedly aware of this fact.

Nos. 3 and 5 seem to have been disturbed by Squier & Davis. They contained one or two objects of copper, an altar, some pottery fragments and bones.

No. 16 yielded nothing of importance. From surface indications the village site about it was thickly populated.

In the case of Mound No. 1 there is no elevation to mark where it stood, but from Squier & Davis and also our field searching, we decided that the spot upon which many beautiful carved bones, fragments of discoidals and ornaments were found, was the correct site. That spot is near "Dug Hole," and is marked on Squier & Davis' map. An old soldier who had earnestly begged for work, but who was unable to use the shovel, was set to work with a hand trowel for six weeks. He confined his explorations to a circle of 100 yards in diameter, finding sev-



FIG. 8—Fragments of Carved Bone, Mound No. 1.

eral score of beautifully decorated fragments, shown in the accompanying illustration. (Fig. VIII.) Please observe the designs and execution of the carvings. They are as fine in detail as those upon the engraved shells from Tennessee and Missouri. Mr. Jack Bennett, our artist, said of them:

"These carved traceries or engravings upon bone, even in fragmentary state, evince an artistic aptitude much beyond the mineral and vegetable stain, and, by their almost microscopic delicacy of execution and unflinching precision of line work, show a high degree of manual skill. Though some are undoubtedly portions of barbaric and desultory design and unsystematic application of indefinite ideas, others bespeak a clearly conceived idea, a definite motive and vigorous execution, not inferior to the predominant motives of early Mediterranean decorative art.

"They are clearly not of an illustrative or imitative design, either realistic or conventional, but created design, founded on purely mechanical motive, with good concep-

tion; and it is regrettable that no complete examples remain to correct artistic valuation of the purpose of the whole."

Of No. 5, Squier & Davis say that the altar was 2 and 1-2 feet above the original level of the soil, and that it was 5 feet long by 3 feet 4 inches broad, and that the sides sloped at an angle of nearly 30 degrees. "It is faced on top and on the sides with slabs of stone, quite regular in form and thickness, and which, although not cut by any instrument, were closely fitted together." I have reproduced Squier & Davis' figure (Ancient Monuments of the Mississippi Valley, page 156, Fig. 44). This reproduction is shown in Fig. XI.

"The stone is the Waverly sandstone, underlying the coal series, thin strata of which cap the hills bordering these valleys. The altar bore the marks of fire; and a few fragments of the Mound-builders' ornaments, a few pearl beads, etc., were found on and around it. The original deposit had probably been removed by the modern Indians who had opened the mound and buried one of their dead on the slope of the



FIG. 9—Skull perforated for Suspension, Mound No. 4.

altar. The stones composing the layer corresponding to the sand stratum were two or three deep, presenting the appearance of a wall which had fallen inwards.”

MOUND NUMBER FOUR.

In this structure were found several skeletons—all upon the base line. Several copper ornaments (spool-shaped) and ocean shells accompanied them. Squier and Davis seem to have disturbed the center—say a space 8 by 10 feet.

Ten feet southwest of the central stake we uncovered a skeleton, head pointing west. Two feet from the scapula (south) lay a detached skull, perforated at its base. It is shown in Figure IX. The contrast between the two was very marked. Dr. Cresson claimed that the detachable one was of brachycephalic type, while the other

was dolicocephalic. He was struck with this peculiarity, as nearly all the skulls from every mound in the group, and all of those accompanied by relics were brachycephalic. The forehead of the detached skull was quite low. Perforated bear teeth, shell ornaments and a buscycon shell lay near the left arm of the entire skeleton. A copper plate and bone awl were found several feet west of the interments just mentioned.

Mound No. 4 seems to have been surrounded by a very low circle. I have not its measurements at hand, but remember it to have been four feet high and fifty feet base.

As far as I can ascertain, this mound must have been the one referred to by Squier and Davis as of peculiar interest. They

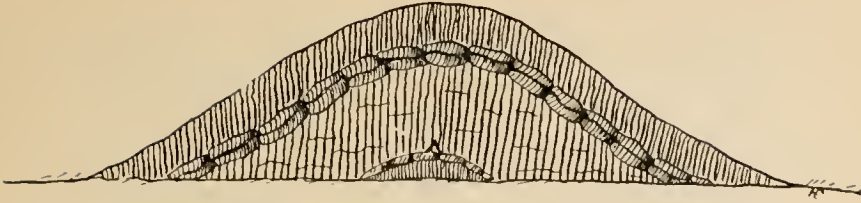


Fig. XI.
A - altar

speak (page 156) of a solitary mound near the center of the enclosure, and give its dimensions as 5 feet high by 40 feet base. They do not give its number. No. 4 is as near the center as any of the tumuli, and more nearly answers their description than No. 19. They compare it to No. 5. In excavating it, we noticed some gravel throughout the structure and a number of small boulders upon the base line near the center, but there was no indication of any boulder altar. As their exploration seems to have been confined to the center of the mound, and our finds were made at some distance on either side, it will be well to quote their description in order that the report of the mound may be complete.

"Like the last described, it has some novel features, although its purposes can hardly admit of a doubt. It has the casing of pebbles and gravel which characterize the altar-mounds, but has no sand layer, except a thin stratum resting immediately upon the deposit contained in the altar. This altar is entirely peculiar. It seems to have been formed at different intervals of time, as follows: First, a circular space, 13 feet in diameter and 8 inches in depth, was excavated in the original level of the plain; this was filled with fine sand, carefully leveled, and compacted to the utmost degree. Upon the level thus formed, which was perfectly horizontal, offerings by fire were made; at any rate, a continuous heat was kept up, and fatty matter of some sort burned, for the sand to a depth of two inches is discolored, and to the depth of one inch is burned hard and black and cemented together. The ashes, etc., resulting from this operation were then removed, and another deposit of sand, of equal thickness with the former, was placed above it, and in a like manner, much compacted. This was

moulded into the form represented in the plan, which is identical with that of circular clay altars already described; the basin, in this instance, measuring 7 feet in diameter by 8 inches in depth. This basin was carefully paved with small, round stones, each a little larger than a hen's egg, which were laid with the utmost precision, fully rivalling the pavior's finest work. They were firmly bedded in the sand beneath them, so as to present a regular and uniform surface. Upon the altar thus constructed was found a burnt deposit, carefully covered with a layer of sand, above which was heaped the superstructure of the mound. The deposit consisted of a thin layer of carbonaceous matter, intermingled with which were some burned human bones, but so much calcined as to render recognition extremely difficult. Ten well-wrought, copper bracelets were also found, placed in two heaps, five in each, and encircling some calcined bones, probably those of the arms upon which they were originally worn. Besides these were found a couple of thick plates of mica, placed upon the western slope of the altar.

"Assuming what must be very obvious from its form and other circumstances, that this was an altar and not a tomb, we are almost irresistibly lead to the conclusion that human sacrifices were practiced by the race of mounds. This conclusion is sustained by other facts, which have already been presented, and which need not be recapitulated here.

"The two mounds last described are the only ones yet discovered possessing altars of stone; and although it is likely there are others of similar construction, their occurrence must be very rare."

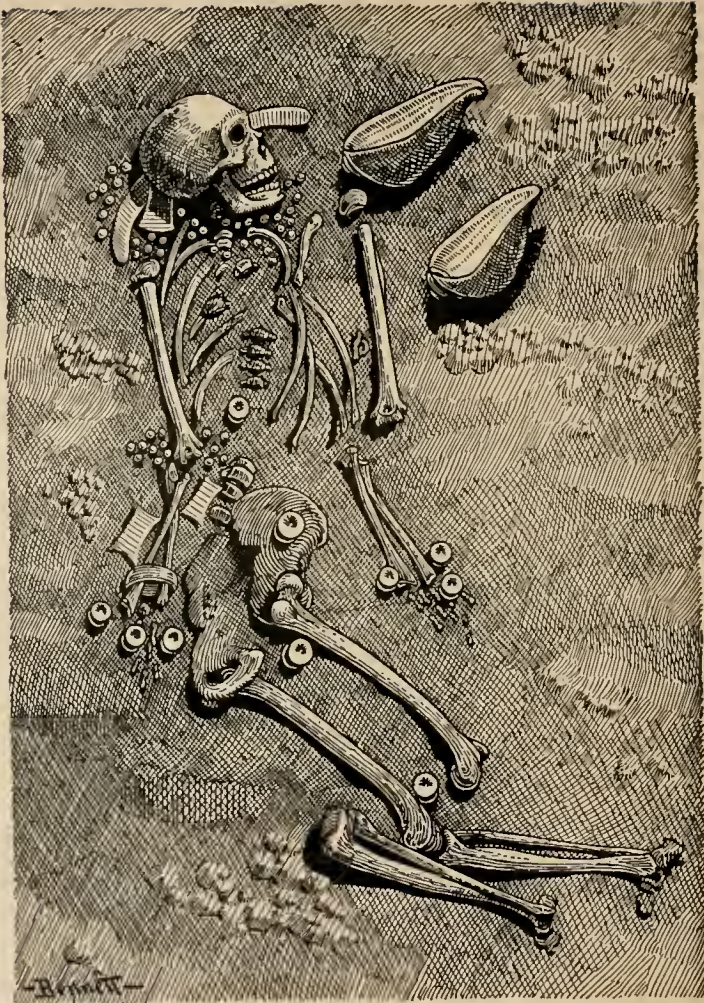


FIG. 12—Skeleton No. 176 (Child) with Objects, Mound No. 20.

MOUND NO. 9.

Although the railroad has about obliterated the structure, we attempted an excavation in a remaining north edge, but found nothing of note.

Squier and Davis refer to it as possessing peculiar features. They say that an altar was placed on one side, and instead of a corresponding one on the other, a stratum of charcoal filled the space. I will quote their remarks in full:

"Over the altar curves a stratum of sand, and over the layer of charcoal still another,

as exhibited in the section. This altar was the smallest met with. It was round, not measuring more than two feet across the top. It was, nevertheless, rich in remains. Within were found:

"1. Several instruments of obsidian. They were considerably broken up, but have been so much restored as to exhibit pretty nearly their original form. Too large for arrow heads and too thin and slender for points of spears, they seem to have been designed for cutting purposes.

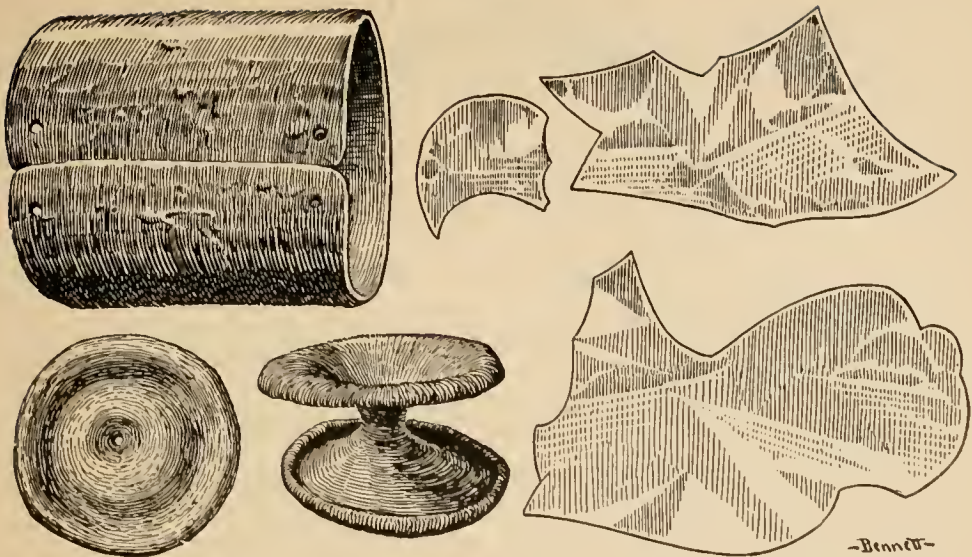


FIG. 13—The copper spool-shaped ornaments, mica sheets, peculiarly cut mica and a broad wrist band of copper exhibited in this figure are all from Mound No. 20.

"2. Several scrolls, tastefully cut from thin sheets of mica. They are perforated with small holes, as if they had been attached as ornaments to a robe of some description.

"3. Traces of cloth; small portions of which, though completely carbonized, were found still retaining the structure of the thread. This appeared to have been made of some fine vegetable fiber. It was what is technically termed "doubled and twisted," and was about the size of a fine pack thread.

"4. A considerable number of ivory or bone needles, or graving tools, about one-tenth of an inch thick. Their original length is not known. Several fragments were found two and three inches long. Some have flat, cutting points; the points of others were round and sharp; some were straight, others slightly bent.

"5. A quantity of pearl beads; an article resembling the cover of a small vessel carved from stone, also, some fragments of copper in thin, narrow strips.

"There were no relics of any kind found amongst the charcoal. The layer of this material was not far from six feet square. It had been heaped over while burning."

MOUND NO. 20.

Although small, yet it yielded a number of valuable objects. A few more plowings and most of these would have been turned up by the share, as they were but two feet below the surface. The mound was not over two feet in height and about 40 feet in diameter. The following quotation, taken from the field notes, explains briefly its contents:

"Sept. 15, 1891. Five skeletons were discovered today, four adults and one child. Two copper ear ornaments and other objects were with No. 173. With No. 175 were copper and shell implements. There is no trace that this mound had been previously explored.

"No. 176 is that of a child nine or ten years old. (See Fig. 13.) To the west side of this skeleton were two cups of shell, the large one a little beyond the head, and the other about five inches from the left arm. Underneath the skull lay a copper celt and an ornament of the same material, fashioned like a crescent. The so-called copper 'ear bobs' were found in profusion, eight or ten covering the remains. These ornaments were found largely upon the hands and wrists. Around



FIG. 14—Long copper crescent found under the head of Skeleton No. 176. Mound No. 20.

the right wrist was a copper band or broad bracelet. It was about two inches wide. I never have seen anything like it. A few copper celts also accompanied the remains. There were several hundred beads and many small shells." (See Fig. 14.)

Under the date of September 16th, the field notes record the finding of a pipe of a reddish, porphyritic stone, about six inches in length and two inches in height. This pipe was beautifully polished, and was one of the finest specimens taken from the mounds on Mr. Hopewell's estate. Also two large bear tusks, coated with copper, were found. Several children's remains were discovered, but nothing of importance was found with them. This completed the work upon Mound No. 20.

Mound No. 20 was very pleasing to the survey. We had long wished to experience a little of the good fortune of Squier & Davis, not so much on account of the relics themselves, but because we desired to see a really important Scioto Valley collection preserved in an American Museum. All of the magnificent finds made by Squier & Davis having been offered in vain to New York and Philadelphia institutions, were finally sold to the Blackmore Museum of England. There remained in this country no collection typical of the whole life of one of our largest prehistoric settlements. Professor Putnam had such an exhibit from the Little Miami Valley and another from Madisonville; but the Scioto Valley—the seat of the highest culture in the Ohio re-

gion—was not properly represented. Finding copper, pearl beads, cut mica, etc., encouraged us to believe that in the oblong and effigy mounds possibly could be found conditions of burials, deposits, etc., which would aid in solving many problems as yet perplexing. Summing up the work to date, we had the following specimens illustrative of aboriginal commerce:

- Discs from Tennessee or Indiana.
- Copper from Lake Superior.
- Shells and pearls from the ocean.
- Mica from southern Alleghenies.
- Galena from Illinois and Missouri.
- Flint from Licking county, Ohio.

Evidences of a considerable advance in art were accumulating. The village sites showed an occupancy by many people for an unknown period of time. Nearly all the objects from a distance indicated an acquaintance with tribes south and west, rather than north or east. We observed that cremation was often practiced; that numerous offerings of valuables were made to the dead. Art in the ceramics, as observed, was very crude, and so far the pottery of the village site, or that taken from the tumuli, was not superior to specimens from small camp sites in other portions of the state.

Dr. Cresson and I went over our notes carefully, and then we began work upon Mound No. 23 (oblong) in the southeast corner of the group.

(TO BE CONTINUED.)

LOST ABORIGINAL ARTS.

A comparative study of the aboriginal relics is often very suggestive, and this is certainly the case in the country along part of the great lakes and the St. Lawrence river. I mention this partly from being more familiar with it, and partly because it was the principal territory of the wellknown Iroquoian family. While some of their sites were on rivers and fishing places, where there was a mixed occupation, their towns and forts were almost always secluded and thus were typical of the family beyond question. The same advantage thus belongs to the study of New York archaeology that is found in the undisturbed geological formations of the same state. Definite and orderly features appear.

In this region all remains are not Iroquoian, nor are the Iroquoian remains confined to it. There were offshoots of the family along the Susquehanna and elsewhere in Pennsylvania. North Carolina had the Tuscaroras, and the Cherokees were not far from these, but the general seat of this powerful family was in the lands drained by the St. Lawrence. The historic Mohawks hardly afford an exception, for they had left Canada late in the sixteenth century, the valley of the Mohawk not being before that a part of the habitable territory of the Iroquois. We can definitely trace movements of these and others before the colonization of New York and Canada began.

In this territory are some mounds which have no relation to the known inhabitants, but the defensive works are mostly Iroquoian. Were either the Iroquois or the Algonquins the true descendants or the immediate successors of those who built these mounds? Their study makes it altogether improbable. This is the region of the bird and bar amulets and of many

curious articles of striped slate. Had the ancestors of the Iroquois and Algonquins the art of making these? If so, why is there no remaining trace among their descendants? Why did they not make stone tubes, gorgets or gouges? None have ever been found on an unmixed Iroquoian site. If they once had this skill, how had they so universally and absolutely lost it?

Fragments of steatite vessels are widely scattered through New York, but the Iroquois invariably used earthenware, and many of the Algonquins, only vessels of bark. If these were descendants of the first-comers, why was steatite laid aside? Were these lost arts? Or, did their ancestors know nothing of them? These questions include the grooved axes, slate knives and other things perpetuated neither by contact nor descent; but the conclusion will be that the later comers knew nothing of some previous inhabitants or visitors.

This is but a small part of our land, however, and a wider field may be taken in. So far as is known, no one ever found a stone perforator on an Iroquoian site. I use the term Iroquoian to denote all members of the family, early and late. No stone perforators have been described among any historic tribes, except in the rudest forms. Yet large quantities of these, of fine form and finish, have almost everywhere been found. How did it happen, if historic or other Indian nations are the descendants of the true aborigines, that these implements have everywhere disappeared after having been everywhere used? Among the Iroquois the bone awls perhaps supplied their place, but this was not so much a change as an original article brought with them by that people. The earliest sites, as well as the latest, supply these and not those of stone? The stone scraper is another of these prehistoric articles, absolutely without a representative among the Iroquois.

Without dwelling on the varying forms of arrows, spears and knives, there seems an almost absolute break in the use of the

spear itself. Taking average collections, with the proposed distinction between arrows and spears, we might perhaps allow five arrows to one spear; a fact possibly explained, but throwing doubt on the classification. But then we discover that the true stone spear was prehistoric everywhere. Notwithstanding its wide distribution and great numbers, none of the many nations along the Atlantic coast retained it as a weapon. Rarely is a spear of any kind mentioned, and then it had a head of hard wood or bone, and was used in fishing alone. How did it happen that so useful a weapon to primitive man was so completely laid aside? If the later inhabitants were descendants of the first, could they, without exception, have forgotten all this? If they came as conquerors would they not have retained some warlike arts of the conquered? With continual contact or continuous descent there could have been no such great change.

As an invading and civilized people we have brought such changes, and yet Indian arts disappear slowly. Had Europeans not come, all later arts would have survived. What can we conclude but that in some past period sudden and sweeping changes came, before which many early arts at once disappeared.

W. M. BEAUCHAMP.

The custodianship of the Serpent Mound Park, which includes the Great Serpent Mound and several other ancient mounds, as well as village sites and burial places, has been transferred to the Ferriss Library by the Peabody Museum of Harvard University. The Ferriss Library was established by bequest of Miss Phoebe Ferriss, who was the owner of the land upon which is located the noted Madisonville Prehistoric Cemetery, a portion of which Miss Ferriss has left for scientific exploration by the Peabody Museum.

H. I. S.

AN EXPLORATION IN ARKANSAS.

About fifteen years ago, hearing of a mound in Arkansas from which some specimens of pottery had been obtained, I determined to visit it. I found the spot like most of the prehistoric places, hard to reach, being about thirty miles above Memphis and situated on a "cut off" of the Mississippi river. The river frequently straightens its channel by cutting through a long bend. In this case the bend was thirty miles round and the cut through only two miles. These "cut offs" soon become shallow and are no longer navigable for boats; indeed, they become the lakes of Mississippi and Arkansas. I was obliged to land eight miles from the mound, and to reach the place in a road wagon through an unbroken forest of almost tropical density. The country traversed was a dead level, subject to overflow, and only broken by sloughs which carry surplus water into the river. When we finally drew up at the "mound field" I was surprised to find it an elevated plateau, of twenty or thirty acres extent, evidently of artificial construction, and surrounded by what seemed to be the remains of a moat or canal. This plateau is ten or twelve feet above the surrounding country, and is entirely above overflow. No trees have ever grown on it. Cotton is raised on it when rains are abundant, but it suffers much in a dry season.

About the middle of this plateau stand two mounds, the larger of which is still about thirty-five feet high. Near the edge of the plateau stands a negro cabin of most primitive construction. In reply to our repeated hallos there finally appeared an old half-breed, negro and Indian, accompanied by two black "possum" dogs. I had heard that he knew how to dig for relics, and he informed me that a number of years before he had been employed by Captain

Hall, who was making a collection for the Davenport museum. I tried to persuade him to dig, for I was extremely anxious to see something come out of the ground, but he seemed very reluctant; said he had lent his spade to dig a grave and it had been broken. We had brought a shovel in the wagon, and I finally persuaded him to dig by promising to pay him by the hour. There was about an inch and a half of melted snow on the ground, which made it very muddy, so I tried to remain in the cabin. I supposed that of course he would go directly to the mound, but instead he commenced digging on the edge of the plateau.

After waiting for an hour I grew impatient, and went out to see what he had accomplished. I found that he had dug six holes, but had found nothing.

The soil was almost perfectly black, and so light that it could be easily removed with a shovel. About four feet of soil has been made since the mound builders occupied the land, and everywhere after digging down this distance, are found broken bits of pottery, pebbles charcoal and other substances foreign to the soil. Old Sidney said: "Wherever you find ashes there you find a grave," and so when he saw no trace of them he abandoned the hole and began another.

It was growing late, and I was told that I must give up my quest. I stepped a few feet into the field and pulling up a cotton stalk, said: Dig here, and if you find nothing I will give it up. In a few minutes he threw out a shovelful of ashes and said, "Da's yur Injun." He continued digging, finding the ashes, till he had gotten the hole seven feet deep. Then the shovel struck something hard, and on examination it proved to be the thigh-bone of a man. After a half hour of hard and careful labor, we uncovered a splendid specimen of a man.

It seemed in perfect condition, the arms laying straight at the sides and the head slightly turned. On trying to lift it, we found most of the bones crumbled. We got one perfect thigh-bone and several vertebrae. The jaws were sound, except that they broke through the middle.

Two large jars were found, one on each side of the head. I give you this description in detail, as it exactly explains the method by which my large collection was obtained. I questioned the old negro as to the manner of burial, etc. He said he had never found a body which was not buried deep in the ground, with the limbs laid straight, as in modern burial.

A most remarkable feature of this prehistoric settlement is the large number of bones that are found. With these mound-builders, many of the bones are in an absolutely perfect state of preservation.

Before leaving the place I made an arrangement by which the man was to dig for me constantly, and I was to pay him for every specimen, of whatever kind, he obtained. I provided for him all necessary implements, and for a number of years he devoted himself to the search for antiquities. He found it more fascinating and remunerative than hoeing cotton. I disposed of many of the jars, reserving only unique specimens, so that there are no duplicates in my collection. They are in every conceivable shape, and range from the rudest mud pipes to those of elegant Greek and Egyptian design.

It is very interesting to observe the wide range of inter-communication shown by the marine shells and stones from all parts of the United States, gathered at this one spot.

I could write at great length of the many developments of a collection like this, but I feel that we are but beginning to make discoveries about the wonderful people who inhabited our valley. Most of my collection was obtained within a radius of a square mile.

CARRINGTON MASON.

EDITORIAL.

A writer in one of the New York daily papers says: "Upon looking into the crypt of the Grant tomb one is much impressed with the lack of conformity to a sentiment that has existed for centuries in the manner of placing the dead. The custom of laying the head to the west is universal in Christian burying grounds. It is supposed to have originated in a correct idea of the eternal fitness of things, since, according to scripture, Christ, with his angels, will appear in the east with power and great glory, and the dead, so placed, when raised up will face his coming. In the case of General Grant, his head lies to the east. Now, when Gabriel calls 'attention,' our great commander, from his present position, will have to 'right about face!' The city of New York should see to it that the sarcophagus is speedily turned around, so that when the illustrious dead shall rise it will not be with his back to the Master."

In the mortuary customs of the primitive American race no rule prevailed in regard to orientation of the body, and we find the remains of their dead in every diversity of positions. But in portions of the eastern hemisphere, where mythological culture had reached a higher plane long before the birth of Christianity, the dead were laid with the feet to the east, in accordance with ideas of sun worship or solar symbolism. The Bible writers, in fixing the east as the point at which Christ would appear in the great day of judgment, were influenced, no doubt, by the sentiment still prevalent at the time, that the sunrise was the abode of the solar deities.

The placing of General Grant's remains with the head to the east, if such is the case, is merely one of many indications that in this enlightened age progressive intelligence is outgrowing the myths of ancient mental bondage.

J. F. S.

Dr. Franz Boas and Harlan I. Smith, of the Jesup North Pacific Coast expedition, left New York May 25th, for British Columbia. They were accompanied by Dr. Farrand, of Columbia University, and expect to traverse nearly the entire coast of British Columbia before their return in the early winter, when they will digest their results before undertaking another season's work.

Besides the party having our associate editor, Mr. Harlan I. Smith, as its chief Archaeologist, sent out by the American Museum of Natural History to explore our Northwestern coast for traces of early Indian immigrations, the Field Columbian Museum also has sent a party to that region for the same purpose under the management of Prof. George A. Dorsey. The well-known ability of the scientists employed to prosecute the search in that direction for evidences of the Indian's first appearance on this continent—late as it is for such investigations—gives encouraging assurance of success—if indeed the Indian did first enter America through that gateway.

There are unscrupulous persons in certain localities engaged in the manufacture and sale of spurious Indian relics who should be investigated by local grand juries and prosecuted for swindling, or obtaining money by false pretenses. The Antiquarian will spare no pains or expense in ferreting out these frauds and exposing them, and also in aiding in their prosecution. A "dealer" in Jonca, St. Genevieve county, Missouri, who advertises himself as a "Commission Agent, Dealer in Curiosities and Indian Relics," may have genuine articles for sale; but we would advise those who may be induced to patronize him to order the goods "on approval" and inspect them closely before making payment.

BOOK REVIEWS.

The Antiquity of Man in the Delaware Valley. Exploration of an Indian Ossuary on the Choptank River, Dorchester County, Maryland. The Finding of the Remains of the Fossil Sloth at Big Bone Cave, Tennessee, in 1896. By Henry C. Mercer.

The above monographs reached us as separate pamphlets from the gifted author. The first two have been incorporated in a volume recently published by Ginn & Co., Boston, 1897, and are re-printed from Vol. VI of the Publications of the University of Pennsylvania. The third pamphlet is a reprint from Vol. XXXVI of the Proceedings of the American Philosophical Society.

While all three are valuable contributions to science, the first named will attract particular attention because of its bearing upon the absorbing question of man's first appearance on this continent. Prof. Mercer's great ability, sound judgment, indefatigable application and habits of careful scrutiny and investigation; together with his extensive observations in Yucatan and various parts of this country; and his personal studies of the drift implements in the collections of Europe and inspection of localities where they are purported to have been found, qualify him to express opinions having the weight of unquestioned decisions.

Men in the first rank of science and learning hold diverse views in regard to the approximate geological period of Man's first appearance on earth. On the eastern hemisphere, with much perplexing uncertainty in defining the true geological horizons in which undoubted traces of man are found, the preponderance of evidence seems to establish his first presence there in the late Pliocene or early Pleistocene age. In the drift-covered portion of North America, the testimony of certain rude stones, claimed to have been artificially shaped, discovered in deposits believed to be pre-glacial or inter-glacial, has been thought by some sufficient to fix the date of man's existence here to be contemporaneous with that of the mastodon and elephant, before or during the ice period. The evidences upon which these conclusions were based, however,

have recently been subjected to crucial examination and destructive criticism. *En passant*, we may here remark that we have not yet been made fully acquainted with the results of Mr. Volk's exploration of the Trenton gravels. The eminent scientist under whose supervision the work was done may possibly favor us with a report of it before the expiration of this century or at some time during the next, and produce proof that will shed new light on the controversy.

In his "Antiquity of Man in the Delaware Valley," Professor Mercer recounts his investigations in formations of the same period and contiguous to the Trenton flats, and traces the so-called palaeoliths of the latter from the hills where the argillite blocks were quarried to the workshops where they were rudely fashioned; and clearly shows that these objects, by some regarded as being of glacial or pre-glacial age and the equivalents of the Drift implements of Europe, were the product of Indian industry and of no great antiquity.

In this, as in all other labors for science, Professor Mercer displays the same unbiased efforts to reveal the actual facts, and the same keen, penetrating tact in discovering them.

His "Explorations of an Indian Ossuary," or burial pit, on the Choptank river, is enhanced in value by the appended description of the human bones found in it, by the late Professor E. D. Cope; and of evidences of ravages of disease in some of them described by Dr. R. H. Harte, of the University of Pennsylvania.

The first remains of the Sloth discovered in North America were described in 1797 by the great statesman, Thomas Jefferson, who named the animal the *Megalonyx*, or *Big Claw*. Since that time many separate bones and a few entire skulls of the strange creature have been found in different parts of the United States. In the Big Bone cave, in Van Buren county, Tennessee, a few bones of the great Sloth were discovered in 1835, and again a few more in 1884. In May, 1896, Professor Mercer made an exhaustive exploration of that cave with the result of rescuing several additional bones, presumably of the same Sloth's skeleton previously found there. His account of the

prosecution of this search is well illustrated with many fine cuts, representing each bone recovered, and many other objects associated with them. Nothing escaped his vigilant notice, and he carefully describes everything seen in the cavern from its geological structure to the remains of a prehistoric fly and cricket. The North American Sloth was a huge beast, as large as a grizzly bear; and though long since extinct the bones in this cave seemed quite recent, and there still adhered fragments of cartilage to some of them. "They fail to lend the color of antiquity to the situation," says the author; "on the contrary, like the peccary bones found at Durham cave, like the remains of tapir and mylodon discovered in Lookout cavern, they seem modernized by their surroundings. Let us infer that we have found a species which, long surviving its day and earlier relationship, had become an anomaly; that we have modernized the fossil Sloth, if we have not definitely increased the antiquity of the Indian hunter, whose first coming the animal doubtless witnessed in the woods of Tennessee."

Littell's Living Age. A Magazine of Foreign Periodical Literature. The Living Age Company, Boston.

This sterling periodical comes to us every week with all the freshness, spirit and vigor of its early days. It is now entering the fifty-fourth year of its living age, and seems to be imbued with increasing vitality and prosperity and wider popularity. For more than half a century it has given its readers the best of current literature of this country and England, and has recently increased its scope to include translations of the choicest literary productions of all the countries of continental Europe. To accomplish this, it has added eighty-eight pages to its quarterly issues, making an additional volume each year of 352 pages. This new departure greatly extends its range of interest and usefulness; while in every respect it maintains its former high standing in the front ranks of periodical literary publications. In the course of twelve months it gives over thirty-five hundred, double-column pages of best reading matter obtainable, at the low price of six dollars a year.

J. F. S.

CORRESPONDENCE.

Editor of The Antiquarian:

I have noted with much interest what you have said in *The Antiquarian* in regard to the prehistoric Indian dog; and, while I may not be able to throw any light on the subject, especially from a scientific standpoint, as I am not a scientist, I am, however, of the opinion, and always have been, first, that the prehistoric Indian had dogs, and second, that their dogs were domesticated wolves.

And while I do not remember any particular mention of dogs having been seen among the Indians at the time of their first contact with the whites on the Atlantic sea coast, yet the earliest mingling of the whites—the trappers and hunters—with the Aborigines of the interior, sometimes make mention of their wolf-like dogs; and wherever the Indian dog is described he is almost invariably compared to the wolf. But there is no reason why the Indians should not have domesticated the wolf; for it is certainly practicable, the young were taken with little trouble and they would make just the sentinels desired around the camps. These dogs, too, if reports are true, also served the red man for food when pressed with hunger, or short of meat for a feast, which were reasons sufficient to prompt him to keep a supply of that kind of food for emergencies—a diet of which he was very fond.

The slight difference, too, between the Indian dog first mentioned by the white hunters and trappers, and the wolf, although these descriptions are few and meager, is to me very strong evidence that these dogs first found with the wild children of America were in some way very nearly allied to the wolf they appear so much to have resembled. The whites, of course, brought over dogs from the old country—the first likely from England—and those brought over were no doubt of the best breeds of that day, such as the English bull-dog, terrier, gray-hound, mastiff, etc., and from these the Indians must have obtained their start in dogs, if they did get their start from the whites. And the query is, what has converted these dogs into the wolf-like

things mentioned by the early hunters and trappers? And why are the Indian dogs, up to a few years ago, always mentioned as "wolf-like?" By inbreeding they would naturally deteriorate into a miserable mongrel such as we meet at every corner of the street; but they would no more change into a wolf, or wolf-dog as the hunters called them, than the wild horses that ranged over our western plains would have degenerated into "wild asses" instead of the scrub ponies as we now find them.

Again, these wolf-like dogs appeared to be very like the wolf common to the vicinity where their owners lived, being more like a twin brother of the coyote than like a dog; and their bark was the slightly modified yelp and howl of the coyote of the neighboring hills. Again, if not domesticated wolves, they must have been a cross between the dog and wolf—dogs obtained from the whites, which is hardly reasonable, as such a proposition has more the appearance of an experiment of a scientist for the purpose of noting the result, than the act of a wild savage to improve the breed of his dogs. And again, if the native of the far north had the genius to domesticate the wild deer for his use, is it more than fair to presume that the wild children of the further south were equally endowed—to make the most of their surroundings—to take and use as a camp sentinel and guard, and also a food supply in case of need, as well as a companion, this wild dog—but little wilder than the Indian himself—that was always within his sight during the day and come around his wigwam at night to feast on the bones of the game slain with his stone-headed arrows?

W. H. THACKER.

Friday Harbor, San Juan County, Washington.

Editor of The Antiquarian:

I opened a mound here last fall, situated on Section 18, Oregon township, Lapeer county, Michigan, of which I will give you a report. It was oval in shape, sixty feet long by thirty-six wide and now six feet high, located eight rods south of Flint river,

in the high bank which is here forty feet above the level of the river, the opposite side being a low bottom. Its long axis was east and west, and it was composed of the surrounding soil mixed with river sand and gravel.

It contained fourteen human skeletons, one of which lay at full length with the head to the north and face turned to the west; all the others seemed to have been buried in a bent or crouching position. They were apparently of all ages from infancy to old age. Quite a number were placed in pairs side by side, and in one place I found together remains that seemed to be of a mother and two children, only portions of the thin skulls of the infants remaining. These were near a large bed of ashes and charcoal, and the adult bones were somewhat charred.

There were three sections or levels in this mound, the first resting on the original surface, then a middle section, and the upper one. In the lower and middle parts were the skeletons, and numerous fire beds or great deposits of ashes and charcoal all through. Some of the bones were charred but none completely burned.

Under the head of the skeleton lying at full length was an arrow-point of flint and a stone shaped like a rude axe. Another arrow-point was found with another of the skeletons, and these were the only objects of stone found or seen in the mound. There was but one piece of pottery found, and it was a bowl lying at the mouth of one of the skulls facing the west. It is nearly globular, five inches in depth and six inches high, a little flaring at the top, and roughly indented on the outer surface as though it had been moulded in a grass or willow basket. Its only ornamentation was a series of marks around the opening made probably when it was soft by pressing the thumb nail in the clay. These were all the articles buried with the dead excepting, near the center, not far from the bottom, was the tusk of some animal. It is two and a fourth inches long by one and three-fourths wide and a little flat, and must have been longer, as the part inserted in the jaw is broken off. Its enamel is nearly gone, and it has marks of having been near the fire.

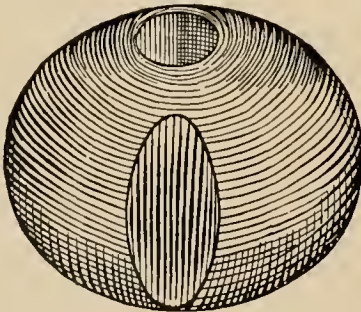
On the mound were three large pine stumps whose roots had penetrated far below and around several of the skeletons, completely hemming them in; good evidence of the antiquity of the burials. From all indications it seems probable that the bodies of the dead Indians were deposited in this mound at different times, and maybe at long intervals from each other; but the last burials must have been made long before those pine trees began to grow there.

BYRON E. DODGE.

Richfield, Michigan.

Dr. Clarence Loveberry:

Dear Sir—I have in my possession a polished, banded, slate stone, almost circular in shape, the greater diameter being two inches and the less one and three-fourths. There is a circular opening from side to side through the smaller diameter, one end of which is nine-sixteenths of an inch and the other eleven-sixteenths. On the side of the stone is a groove parallel to the open-



ing through the center, one and one-quarter inches long, three-fourths wide, and about one-quarter deep. The curvature is quite uniform and regular, the bands of the slate crossing the groove at a right angle. Enclosed find rough sketch. Have you ever seen a similar one, and for what, in your opinion, was it used? Yours truly,

ALMER HEGLER

Washington C. H., Ohio.

Will some reader of The Antiquarian answer this inquiry?

Editor of The Antiquarian:

Your article entitled "The Cliff Dweller's Sandal Last" prompts me to send you enclosed drawings of similar specimens secured in New Mexico by Mr. Morris, an amateur archaeologist, who supposed them to be grave, or head stones, because they were found lying over remains of the dead. This hypothesis of their use is scarcely tenable, as nearly all forms of implements have been found in or upon graves and burial places of the aborigines.

I have a sandal of yucca fiber, from one of the cliff houses in the San Juan canyon, taken from a walled-up grave in the rear of the main room, to which your paper called my attention, and induced me to investigate the matter. Although I have been, up to the present writing, unable to suggest the real use of these objects, their specialized form certainly indicates some important and no doubt special use. Those "lasts" you describe, as well as these I have outlined to you, seem too heavy to be used for the purpose you mention, especially when we consider how much more conveniently a last made of wood would serve the purpose. The sandal in my possession could not have been constructed by weaving upon a last in the manner you have described, as it is braided from a number of strips of fiber, having the edges turned continuously back and forward throughout leaving no seam or bound edge.

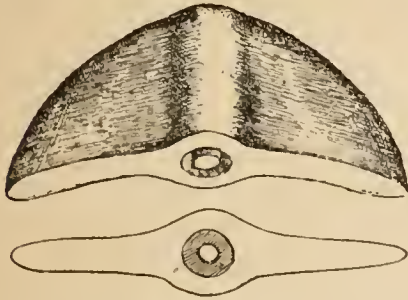
The figures on this sandal are produced in the process of braiding by its use of fibers stained black and red; and although it is worn through at the heel the colors are still bright upon the upper surface. If we consider these objects to be, as Baron Nordenskiöld suggested, "patterns for marking out soles for moccasins," the same objection could be urged, viz: that patterns made of wood would be much preferable, and that material would more probably have been selected for that purpose by primitive people in preference to stone. Lastly, their size, at least of some of them, would preclude this use for the purpose stated.

THOMAS HARPER.

Bellevue, Pa.

Editor of The Antiquarian:

I enclose a drawing of a curious stone implement that was plowed up in a garden here a few weeks ago, and, as it is different from any Indian relic that I ever saw or read about, I would like for you to let me know what it is.



The material of which it is made I think is granite. It is not polished, but rather rough as if it had been pecked into shape. The hole shown in the drawing is half an inch deep and nearly three-quarters of an inch in diameter, with a core of stone in the center. The specimen is well proportioned and quite perfect and about three times as large as the drawn figure.

It was found in the town of Ellington, Chautauqua county, New York, and is now in my possession. Has anything like it ever been found in Ohio?

W. T. FENTON

(This relic is an unfinished "Banner Stone," but why called Banner stone, and what office this interesting class of objects performed in prehistoric times, we will not undertake to say. It is thought they were insignia of rank, or used in certain "ceremonials;" and this, as Mr. Seever has well said, implies that no further questions should be asked; for with that suggestion investigation seems to have reached its utmost limits.

The specimen figured is probably wrought from diorite, or greenstone, and has peculiar interest as demonstrating so plainly the processes employed in its manufacture. It evidently was carefully pecked in shape with sharp-pointed flints or splinters of quartz, and was thus reduced to the desired form and proportions before drill-

ing and, lastly, polishing was commenced. It also well exhibits the mode of perforating the stone with a hollow drill, a piece of cane perhaps, filled with sharp sand and rotated with a bow string.

Unfinished specimens, such as this, are not uncommon about the old camping places of the mound building Indians, and finished banner stones, of various patterns and material, have been found, as shown by Commodore A. E. Douglass' table of Geographical distribution of American Indian relics, more numerous in Ohio than in any other state of the Union.—Editor).

Editor of The Antiquarian:

This portion of Kansas is a rich field for the Archaeologist. Four miles east of the city, on the bank of the Kansas river, is the site of an ancient village of the prehistoric Indians, from which many interesting relics have been taken within the past three or four years, and many are yet picked up after freshets or hard rains. An old cemetery near by it has also been prolific in fine specimens of stone art remains, such as grooved axes, bone needles, flint weapons and pottery fragments. The constantly encroaching river on the clay banks often expose these evidences of aboriginal life. From another old Kaw village site four miles north of this place, on the bank of the Big Blue, near Dripping Springs, several fine pipes and stone implements have found their way to different collections; or have been found only to be again scattered and lost. On McDonald's creek, in Geary county, nine miles south, is also another extensive camping place of the early Indians, which seems to have been occupied for a great length of time. Near by this place are several shell heaps; and immense quantities of flint chips and refuse there indicate long-continued workshops or open-air factories where flint, as raw material, was worked into tools and weapons. Knives and scrapers of all kinds, and other flint relics without number have been found there. On Humboldt creek, also in Geary county, on the farm of Mr. Brown, are the remains of another flint workshop; and on almost every farm along this creek can be

picked up numerous specimens, such as arrow and spear-points, broken pottery, and various types of stone objects. Along the Blue river, here at Manhattan, at low water, similar relics are frequently discovered, the material of which nearly all the arrow and spear-points, knives, scrapers, etc., we find here are made is not the true flint, but a variety of chert said to be obtained from an out-crop on the south of the Kansas river. There are a good many mounds about here, especially in Riley county, some of which have been opened by Mr. W. J. Griffing, who has a splendid collection and is our local authority on archaeology.

G. E. WELLS.

Manhattan, Kan.

Mrs. E. L. Golson, writing from South Saginaw, Michigan, states that "quite a number of notched flint scrapers resembling those described by Karl Dilg, and named by him Chicago Crescents, are found in that vicinity." Mr. Joseph Wilson has found several well-marked specimens of them in Cass county, Illinois. They no doubt were emergency implements made to serve a present purpose and then thrown away.

FIELD NOTES.

I have been excavating in the interests of the Ohio State Archaeological and Historical Society in Ross, Pickaway and Perry counties. Since writing up my silver find I have opened more than a dozen mounds and made some interesting discoveries. In one structure I found traces of a "log pen burial;" in another a woman's skeleton covered with several hundred beads and some other relics. In one mound I secured a coffin or boat-shaped ceremonial, some large shouldered spear heads of Flint Ridge material and some long bone spear or arrow-points. These latter were hollowed out to fit the shaft.

In a large mound near Somerset I found five skeletons buried in a circle and with them bone awls and other objects. I am at present writing (June 15th), working upon this mound and as it is more than twenty-five feet high, I cannot hope to complete the work for some weeks. C. L.

The Curator of our State Museum, Mr. Moorehead, returned from his sojourn in New Mexico with numerous cliff and valley-ruin specimens for the museum. He reports some interesting facts regarding the superstitions of the Navajos. Having hired a number of Indians along with his other men to dig in the ruins he could get them under no circumstances to handle bones found during the course of explorations. The Navajos said they did not object to digging out the rooms, refuse heaps, etc., but they did not desire to dig up skeletons. They did not want to handle pottery that came in contact with bones. They told the interpreter, Dr. W. N. Wallace, (Navajo Bill), that devils would come if the bones were disturbed. Upon one occasion when some of the men were at a distance from camp digging in company with an Indian a number of whole vessels and skulls, long bones, etc., were found. Placing the finds in two baskets one of the men told the Indian to carry them to camp. He said he would not unless the men went along. So they waited until dinner time and then repeated the orders. He wrapped each basket handle in grass and amid much grumbling carried the finds to camp.

Navajos will not eat fish. Being bothered by many Indians coming around at meal time the cook opened a box of dried codfish, took out sufficient for supper and then turned the box so that a large blue codfish stamped upon the side was plainly visible to anyone coming near the camp fire. The Indians told the interpreter that this was "no good" and that all the men would be sick. Afterwards they did not ask the cook for food while the box remained in sight. C. L.

We now have an account of the discovery of a copper kettle of two gallons capacity, near Summit Hill, Ross county, O., under the roots of an old tree blown down; with the further information that it is "covered with strange lettering, cut in it with a chisel, that no one can translate." This is probably a very interesting relic, but its literary embellishments must place it in the doubtful list regarding its archaeological value. J. F. S.

R. W. Mercer, a peculiar character well-known among collectors and who died about a year ago, left a store full of various relics, specimens in geology and mineralogy, coins, paintings, etc. The administrator of his estate has been trying to sell them for a long time. He had numerous offers, but because of his peculiar business methods and the high valuations which he set upon the stock he gradually drove away all those who made bids upon the whole, or desired a part of the collections. At last the Probate Court ordered a sale by auction and the "Old Curiosity Shop" was closed out beginning June 15th.

The auction sale lasted but a few moments, and a young Cincinnati bid \$2,250 for the entire store. Since then (June 15th) the Court has cancelled the sale and new complications confront the administrator. As it now stands Mercer's heirs will be the sufferers. Poor old Mercer has probably turned in his grave more than once. His stock was sufficient to pay all debts and leave a comfortable competence for the family had it been sold last summer.

C. L.

Work will soon be actively in progress on the new Museum of Archaeology and Palaeontology of the University of Pennsylvania, at Philadelphia. The part now to be erected, to cost \$500,000, will represent the third of the entire contemplated buildings projected somewhat on the plan of the Fisheries building at the World's Fair. It is to be built of Salmon brick, with central dome and plain in style. The collections in the different museums of the Pennsylvania University are not so extensive as those of the U. S. National Museum or the American Museum at New York; but in the value and wide range of its original investigations and its contributions to our knowledge of natural history and natural sciences, it ranks with any institution of our country.

J. F. S.

THE MUSKWAKI TRIBE.

The government's attention was lately called to a strange people, known as the Muskwaki, occupying a small tract of land in the eastern central part of Iowa. Al-

though the Muskwaki have for many years been close neighbors of the whites they have always held themselves strangely aloof from the latter. They have ever been peaceful, and, to all appearances, law abiding, yet the whites have never been able to know them, to exchange gossip with them, nor even to corrupt them. On account of this unusual reserve the Muskwaki have always been regarded as a mysterious race.

Professor W. J. McGee, has just returned from an interesting visit to these people, made in behalf of the Bureau of Ethnology. The territory of the strange race lies in a bit of picturesque country, principally along the bottom of the Iowa river, in the southern part of Tama county, Iowa. The several little winter and summer villages occupied by the different clans or gens are distributed both among the lowlands and the adjacent hills. The Muskwaki number in all about four hundred souls, who occupy three thousand acres, all their own. Their agriculture is purely aboriginal, the crops consisting principally of the aboriginal Indian corn, beans and pumpkins. Their only domesticated animals are ponies and dogs.

Professor McGee describes the Muskwaki as strictly aboriginal, clinging to the customs of their ancestors more tenaciously than even more isolated tribes. One of these is their sacrifice of dogs as an important part of certain religious ceremonials. To them the dog is a sacred animal, and for this reason it is deemed fitting that now and then its life should be made an offering to the Deity. In certain rituals the dog's flesh is eaten.

The Muskwaki have an exaggerated aversion to white people. They treat whites coming to their villages as we commonly treat street beggars. This contempt is not expressed in threats or actual deeds of violence, but rather by condescension and hauteur.

The Muskwaki object to having their children educated in the agency school, because there they must associate with white children. They say that the white children attending are not always honest, that they have been known to be deceitful and sly, and sometimes to lie and take things which do not strictly belong to them. Honesty

is one of the prevailing virtues of the Musk-waki. They say that white children come to their village, throw stones at them, laugh at them and sometimes enter their houses without being bidden. Furthermore, they say that Indian women educated by the whites too often become morally impure. It is rare that the Musk-waki of either sex intermarries with the whites.

These people have excellent physiques and great statures. Their mode of life is in nearly every respect aboriginal. They dress more like Mongols than red men, wearing odd turbans woven of hemp and bark, while the women, and to some extent the men, part their hair in the middle, and let it hang down their backs in a long pigtail, which, unlike the Chinese pigtail, is rolled instead of plaited. This roll is generally an inch in diameter, a foot long, and is closely twisted with cord.

The Musk-waki house is also strictly aboriginal. Each family or collection of families has its distinct summer and winter residence. The winter houses are built in the forest, that they may be protected by the trees, while the summer houses are in the cleared lands. The winter house consists primarily of a framework of poles, bent to form a semi-ellipsoid, covered with large pieces of coarse matting, woven uniformly from stalks of the cat tail flag. This matting adds to the Oriental appearance of the community. There is a smoke hole in the middle of the roof of the ordinary single house, which has a single fireplace immediately below this opening.

The single house is occupied by two families, one of which lives on one side and the other on the opposite side of the fireplace. The double houses are proportionately greater in size, have two fireplaces, and are occupied by three or four families. The doorway is at the eastern end of each house, that it may admit the first rays of the sun, which planet is the principal god of the tribe. Should one of the tribe kill a man in honorable combat, his doorway must face the south. In these winter abodes the Musk-waki sleep upon the ground, reclining on strips of matting.

The summer houses consist of logs set up in the ground, supporting stringers, the

sides and roofs being made by slabs of bark, fastened with cord, twisted out of the under bark. Inside the occupants sleep upon platforms, being thus raised to admit a circulation of air. In front of each summer abode, and about ten feet distant, is always erected a large platform, upon which the people recline, screened from the sun by a sort of brush canopy. This is used as is the porch of one of our summer residences. The houses, both summer and winter, are clustered in little groups or villages, each of which belongs to a certain clan or gens.

The main object of Professor McGee's trip was to study the fundamental laws of the Musk-waki. He appealed to the chief functionaries of the tribe for information concerning these. To answer his appeal a council was called, attended by the reigning chief of the tribe, the chief medicine man, nine of the old men—the cabinet, so to speak—the Professor and his interpreter. The procedure in this august meeting consisted principally of silence and smoking, the monotony of which was occasionally broken by a very deliberate speech on the part of one of the dignitaries. The result was an announcement that the laws were secret.

Professor McGee says that Musk-waki in English means either "red earth" or "red fox." The white people commonly and erroneously speak of them as a branch of the Sac and Fox tribe. Because of a false impression the Sac and Fox Indians are always grouped together, as though they were one tribe. After having been removed together to reservations, part in Kansas and part in Indian Territory, coldness continued to grow between the two tribes. Finally, all of the Foxes removed to the present territory of Musk-waki. The Musk-waki really are the Foxes, although the Sacs remaining on the reservations are always called the Sac and Fox Indians.

Thomas Daulton dug into a mound on Alfred Pierce's farm, near Manchester, O., July 2d, and secured a wagon load of relics, consisting of arrowheads, hatchets and various earthenware articles. He also dug up several skeletons of prehistoric man.

THE ANTIQUARIAN.

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SURVIVALS OF THE STONE AGE.

Instances where the art of making Stone Implements has been preserved till the present time.

"Traversing tracts of space," says Lecky, "is almost like traversing tracts of time, for it brings us in contact with nearly every phase of past civilization." Lubbock puts the fact still stronger, affirming that there may be found to-day within the British Empire "races in every stage of civilization yet attained by man. The Fuegians, Andamaners, etc., are even now only in the Stone Age."

There are many persons yet living that could bear similar testimony of our own country. To a certain extent I believe that I am one such. Having crossed the plains to California in 1849, and spent some time in the more remote and isolated parts of that state, I became fully impressed with the notion that I had thus been privileged to witness a section of the "stone age" when it was a living, practical reality.

Imagine my surprise, then, upon hearing it remarked, as I did about a year ago, and this by a college graduate, who had given such matters much attention, and who had accumulated a large archaeological collection, that "the manufacture of stone implements was a lost art." Nor would he be convinced otherwise. I was thus spurred into making some examination into the subject, that I might, if possible, find evidence to verify my long cherished recollections. The outcome was all that I could have desired.

Among the first authorities I consulted was Lieut. Joseph Warren Revere, of the U. S. Navy, who was stationed on the California coast from 1846 till 1849, who was a close and interested observer, and who in a chapter on the California Indians, in his

"Tour of Duty in California," gives us the following particulars on the topic in question:

"Like all the family of man, even these spiritless people have their warlike propensities, and maintain armories to make their bows and arrows, and lances. The bows are beautifully made of light and elastic wood, stiffened, and made more elastic by sinews, strongly braced, at the back of the bow. The arrows are neatly fashioned from a peculiar light, strong, straight twig, and are tipped with barbed obsidian heads, and winged with feathers. The head is tied on with sinew, and the shaft is ornamented with rings of the distinguishing paint of the owner's rancheria. Their knives and spear points are made of obsidian and flint. They are dexterous in the use of their weapons, especially the arrows, which are of two kinds, one short and light for killing game, and the other a war-shaft, measuring a cloth yard in length. These are carried at the side, in a quiver made of the skin of a bear's cub or fox, stripped off whole. The bowstrings are made of the wild flax of the fields."

Hittell ("History of California," vol. 1, p. 783,) in treating of the manners and customs of the Indians of Alta California, thus refers to their bows and arrows:

"The principal weapons in use were the bow and arrow. The bow was a yard long and from an inch and a half to two inches wide, made of yew, cedar or other fine-grained, tough and elastic wood, and usually wrapped more or less completely with sinews. According to Duflet de Mofras, its curvature was reversed* so as to increase the tension; and though not large, it was strong and powerful. The bowstring was sometimes made out of sinew and sometimes out of wild hemp and had a small piece of skin attached in such a manner as to prevent any whizzing sound or twang when the bow was discharged. The arrows were from two to three feet long, made of reeds or light wood, sometimes partly of hard wood, and pointed with a head or tip of obsidian, flint or bone, which was bound on firmly with sinews. Many of these arrow heads, and particularly the small

*A peculiarity of bows in the writer's possession, when released or unstrung.

ones, were fashioned with great skill. In some cases they were so arranged as to become detached and remain imbedded in the flesh, if the arrow itself should fall off or be withdrawn. The opposite or smaller ends of the arrows were feathered for about six or eight inches. It was usual to carry a quiver, made of the skin of a fox, beaver, coyote or other animal of the proper size as it was drawn off and uncut except at the tail end, which formed the mouth of the quiver and held the feathered ends of the arrows. In shooting the bow was held in a horizontal position in front of the body; and it seems that the right foot and leg were usually advanced. According to all the old writers, the Indians were expert marksmen with their arrows. De Mofras says that their aim was so correct and their skill so great that at a distance of forty yards they could pierce a horse on the gallop through and through; and incautious travelers could receive arrows thrown from great distances without hearing any noise or suspecting the hands that aimed them."

But the most satisfactory information found was that in the papers by Prof. Otis T. Mason, published in the Smithsonian Reports. One of these papers, in the report for 1886, Part 1, p. 205, is mostly devoted to "The Ray Collection from the Hupa Reservation," in which the manufactures of the natives of this section are described and illustrated quite fully and elaborately. In a general observation, he says:

"As late as 1850 all the hands of Indians now on the Hupa Valley Reservation (pronounced hoo-pah) were living in pristine simplicity of social structure, arts and ceremonies, which even now survive among the old and conservative."

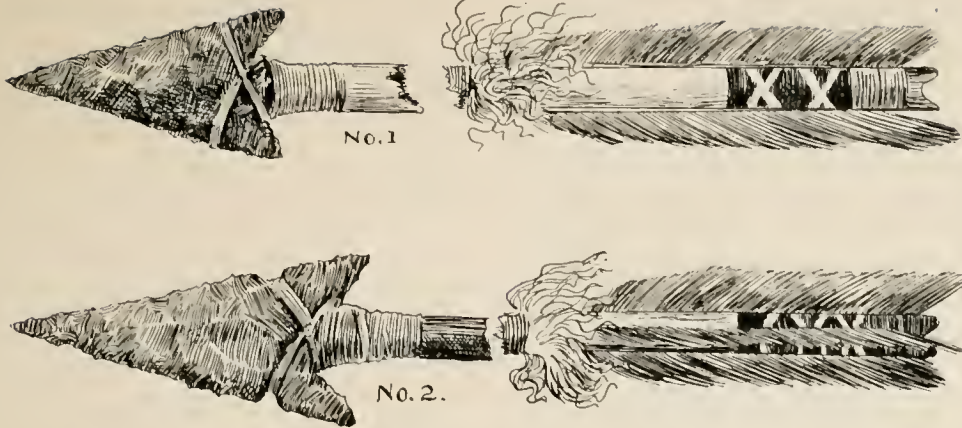
This reservation is in Humboldt county, on the Trinity river, about eight miles above its confluence with the Klamath. It was established in 1864, and the Ray collection was made in 1885. In another paper, in the same publication for 1893, p. 631, under the title, "North American Bows, Arrows and Quivers," he enters with still more minuteness into this phase of the subject, illustrating with numerous cuts almost every detail pertaining to the aboriginal method or methods of manufacturing these articles. He quotes liberally from George Catlin, Lieut. P. H. Ray, Gen. George Crook, Capt. J. A. Bourke, and others, all of whom had personally observed the processes of this sort of Indian handicraft, including the chipping of stone arrow heads, spear points, knives and the like. We shall next note something of these methods.

Under the caption, "How the Indians Made Their Arrow Heads," I copy verbatim the following article from the "Historical Magazine," vol. iii, p. 214, dated 1859:

"The heads of Indian arrows, spears, javelins, etc., often found in many parts of our continent, have been admired, but the process of making them conjectured. Mr. Caleb Lyon, on a recent visit to California, met with a party of Shasta Indians and ascertained that they still used these weapons, which in most tribes have been superseded by rifles or at least by iron-pointed arrows and spears. He found a man who could manufacture them, and saw him at work at all parts of the process. The description which Lyon wrote to the American Ethnological Society, through Dr. E. H. Davis, we copy below: 'The Shasta Indian seated himself on the floor, and laying on his knee the stone anvil, which was of a compact talcose slate, with one blow of his agate chisel he separated the obsidian pebble into two parts, then giving another blow to the fractured side he split off a slab some quarter of an inch in thickness. Holding the piece against an anvil with the thumb and finger of his left hand, he commenced a series of continuous blows, every one of which chipped off fragments of the brittle substance. It gradually assumed the desired shape. After finishing the base of the arrow head (the whole being only a little over an inch in length) he began striking gentler blows, every one of which I expected would break it to pieces. Yet such were their adroit application, his skill and dexterity, that in little over an hour he produced a perfect obsidian arrow head. I then requested him to carve me one from the remains of a broken porter bottle, which, after two failures he succeeded in doing. He gave as a reason for his ill success that he did not understand the grain of the glass. No sculptor ever handled a chisel with greater precision or more carefully measured the weight and effect of every blow than this ingenious Indian; for even among them arrow making is a distinct trade or profession, in which many attempt but few attain excellence. He understood the capacity of the material he wrought and before striking the first blow, by surveying the pebble, he could judge of its availability, as well as the sculptor judges of the perfectness of the Parian. In a moment all I had read on the subject written by learned and speculative antiquarians of the hardening of copper for the making of flint axes, spears, chisels and arrow heads, vanished before the simplest mechanical process. I felt that the world had been better served had they driven the pen less and the plow more.'"

H. G. Dulog also contributes the subjoined charming description to the "Forest and Stream," as quoted by Prof. Mason in the Smithsonian Report for 1893:

"At the base of Mount Uncle Sam, on the west of Clear Lake, California, there is a tract



of two or three miles covered with fragments of obsidian. With material so plentiful, the surrounding Indians are careful to choose only those pieces best shaped by nature for the work; but at places distant from the source of supply, the obsidian, which is often brought in large blocks, is chipped off in flakes from around a central core by blows of a rock. The old expert put on his left hand a piece of buckskin with a hole cut in it to let the thumb pass through, something like the 'palm' used by sail-makers. This was, of course, to protect his hand while at work. In his right hand he took a tool of bone ground down to a blunt point. These tools, made often from the leg-bone of a deer, are assorted in sizes, large ones being used for coarse work and small ones for fine work. A piece of obsidian of the right size was held in the left hand, then the right thumb was pressed on the top of the stone, while the point of the bone was strongly pressed against the under edge of the proposed arrow head, and a little splinter of obsidian worked off. The operation was similar to the opening of a can with one of the old-fashioned can-openers that worked without leverage. Often times material is spoiled in the sharpening. Around deserted camps piles of rejected fragments are sometimes found, either broken in putting on the edge or not being near enough the desired shape to pay for the working up. There results from this process a serrated edge, which in the best specimens is beautifully fine and regular, but in rougher tools is often coarse. The old workman was careful of his stock in trade, and rolled up the fruit of his industry in a ragged blanket to prevent its being injured while in transit from place to place."

Finally, Prof. Dumont Lotz, of the South Bend High School faculty, in a letter to me under date of April 28, 1897, has enabled me to present the following additional information in point:

"During a recent conversation with you the question arose as to the origin of the obsidian arrow heads which are found in large numbers in Washington, Oregon and California. At that time I stated that they were of quite recent origin and had been made and used by Indians who are yet living. I wish to offer some evidence in support of that statement. From 1890 to 1893 I was employed as chemist of the Oregon Agricultural Experimental Station, and in that capacity made frequent trips across the Cascades, often being on some of the Indian reservations in eastern Oregon. During one of these trips I stopped over night at the Klamath reservation. Permit me to quote a few lines from my diary written at that time:

"Oct. 23, 1892. Have met today an old Indian who was at one time chief of the Suohe Indians. He says he is ninety years of age, and surely his looks do not belie his words. He was loth to enter into conversation, but upon my presenting him with a 'bran' new 'Missouri meerschaum,' and a package of 'Seal of North Carolina Plug Cut,' he became more talkative. I showed him a few small arrow heads I had picked up en route and asked him if he knew who had used such things and how they were made. He said that when he was young and before the white man had come, the Indians all used them. He took a piece of almost transparent obsidian which is found in abundance here, chipped off several pieces with another rock until he had one suited to his purpose, went into his hut and returned with the bone of a deer's fore-leg that had a notch in it, and began breaking away the edge of the obsidian very much as a glazier would straighten the edge of a piece of glass which had not broken along the line made by the diamond. In fifteen minutes he had fashioned a very symmetrical arrow head which he gave to me and which I prize very much."

"Now, as this man would not see a half dozen strangers in a year, and probably none of them

would have any interest in such things, I do not think he had learned this art in recent years for the purpose of entertaining tourists or of making money.

"Near the western shore of Goose Lake, in the northern part of Modoc county, California, there is a deposit of obsidian known as 'Glass Mountain.' I asked the stage driver what had caused the great amount of loose 'chips' which are strewn all about and he told me the Modocs and other tribes had in former times come there and obtained material for their arrow heads. The great number of broken pieces would certainly remove all doubt as to the truth of his statement. I am satisfied that the Indians of two generations ago used large numbers of these implements."

I went into the Trinity country, in north-western California, in August, 1850. My mission there was not to study archaic life; yet, situated as I was, I could not help observing some of the phases of that life whether I would or not. The Indians about us were by no means on intimate relations with the whites, generally making their presence known to us as night marauders. Still we saw enough of them to note that, like most of their race that we had met in California and in what is now Nevada, they were little, if any, removed from the stage of utter savagery.

The males were generally innocent of even so much as the fig-leaf, except where one here and there had donned some cast-away garment or fragment of a garment of the whites, perhaps no more than a hat, a vest, or a knit undershirt. The women usually wore only a sort of skirt or cincture made of dressed skins, reaching from the waist to the knees. The dog, a hungry, ravenous, wolf-like nuisance, was the only domestic animal seen. Fire-arms were yet to be introduced. The horse was prized only to butcher for food, for securing which foraging from the whites was the sole reliance. The meagre stock of mechanical contrivances was wholly of native construction, and rarely, if at all, was metal utilized for any purpose.

I had an opportunity while in this section also to observe something of the native mode of warfare, my experience being still attested by a well-defined scar from an arrow shot. In the summer of 1851, I was with a small party of prospectors on the Hay Fork, a branch of the Trinity, where we were set upon by a band of savages out-

numbering us, perhaps, ten to one, the brush lasting the most of a day. We were finally driven to fortify ourselves as best we could.

Except in one instance where a stone was hurled with a sling, the Indians used only the bow and arrow. So far as we were able to distinguish, all the arrows used on this occasion—and we saw many of them—were tipped with stone, when tipped with anything. Two of our party received wounds, in the one case a leg being impaled, and in the other the point entering just below an inside ankle and lodging among the delicate muscles at the bottom of the foot. In both these instances the points were made of material that we took to be junk-bottle glass, but which doubtlessly was obsidian. The next day a party of our friends, who had come to our rescue, in scouring the section roundabout, found a basketful of arrow heads in charge of a superannuated squaw at an otherwise deserted rancheria, the points being wholly of stone. These arrow heads could hardly have been the survivals of a "lost art"; they were, rather, we may readily believe, the productions of workmanship then and there active and alive.

In the fall of this year, I crossed over to Humboldt Bay, a distance of 100 miles, by the extremely rugged bridle-trail. The two races here lived together on much more amicable terms than they had on the Trinity. There was a small rancheria in the heart of the town of Eureka, and we saw more or less of our red friends every day. Many of their words became incorporated in our familiar speech. I shall take occasion in another article to speak of some of the aboriginal peculiarities that I observed here, as well as on the Trinity. It is only necessary to say in this connection that the Indians of Humboldt Bay were scarcely in advance of their mountain brethren, except in so far as a year's intermingling with the whites may have slightly modified their methods and ideas. They were still practically savages in all their belongings.

In 1884, I revisited this section, taking the Northern Pacific route and stopping off at a number of points. I was quite anxious to procure some bows and arrows of the type peculiar to the Pacific coast, and made diligent inquiry for these articles all along

the western part of the journey. I obtained from the Klamath Reservation, through a gentleman of Linkville, Oregon, a bow and some reed arrows, with a raccoon skin quiver, but the quality was not satisfactory. At Humboldt Bay I was more fortunate. This region is off any through line of travel, and has therefore been less ransacked by the relic-hunter. Here Seth Kinman, a noted hunter and trapper, who lived on Table Bluff, had collected quite a museum of the Indian manufactures of that vicinity. But he had a lively appreciation of his treasures, and could not be persuaded to part with a single article. In Eureka, however, I secured two bows and a number of arrows, all the specimens being of the primitive, artistic type, except that one of the arrows is tipped with copper, and several of the others with iron or steel. Yet the most of them have the original stone arrow heads. Cuts of these bows and of two of the arrows are shown in the accompanying plate. One of the bows (Fig. 1), with some arrows, was presented me by George Graham, a Eureka pioneer of high standing, who, with particular emphasis assured me that the articles had been picked up on the Lava Beds near the spot where Gen. Canby was treacherously murdered, and at about the time of that lamentable tragedy. The other bow (Fig. 4) is of the Hupa make, with the ornamental designs peculiar to that tribe. One of the arrows (Fig. 3) is pointed with flint, and the other (Fig. 2) with copper. The flint point measures from the extreme angles five-eighths of an inch in width and an inch and a quarter in length. It will be noticed that the shaft of the latter is in two parts, the purpose of this device being that when the barbed point enters its victim it will remain within while the main section of the shaft will be released. These two arrow shafts are two and a half feet in length, but the most of those in my possession within an inch or two of three feet. The bows are of the yew, a wood indigenous to California and the best wood known for the purpose. The backs of the bows are "covered with a lining of sinew so carefully put on as to mimic the bark of wood, its thickness exactly fitted to the exigencies of the

work to be done." The light-shaded triangles in Fig. 4 are red and the dark-shaded blue, while the zigzag band separating these colors is brownish yellow. **

Some of the arrow heads were missing, and I learned through an old-time friend, W. S. Robinson, that in his neighborhood, near Bridgeville, about 50 miles inland, an Indian known as Pitt could re-point the shafts. I was not long in finding my way to Bridgeville, where I secured the Indian's services, some flint points picked up in the vicinity being used for the purpose. The fastening was done with sinews in the true Indian style.

Pitt, in examining my supply of points, was careful to select those that were slender and sharply tapering as the more suitable to the dignity of the war-path, disdainfully rejecting those that were thick and bunty, with the ejaculation, "coyote." When handling these darts, he took occasion to have me know that he understood the art of making them. This information was communicated mostly by signs imitating the chipping or flaking processes; these processes being precisely the same as those of the Hupas as described by Prof. Mason: "The work is held in the palm of the hand, which is protected by a buckskin pad, and the chips are flaked off by pressing on the edge of the flint with the tool held in the right hand, the ball of the handle resting in the palm." The "pressing," I may add, is downward. Another brave, blind and much older than Pitt, somehow catching the inspiration, began also to edify me by mimicing the operations in question. The glue used in lining the back of the bows, I was informed, was made of salmon skins by the Indians. I may explain that Bridgeville and the Hupa Reservation are both in Humboldt county, perhaps 50 to 60 miles apart.

**These bows have wonderful propulsive force. The points, according to Fremont, "could be driven to the depth of six inches into a pine tree." Capt. Bourke saw two of them (used by the Apaches) "piercing pine trees to a depth of at least six inches." The distance we were from the Indians when shot on the Hay Fork was stepped the next day and found to be 250 paces, though the arrows had been elevated and discharged from a position considerably above us.

In 1886, when I was on another tour to the Pacific coast, the train halted a half hour at Auburn, a station 36 miles east of Sacramento, where in strolling about I espied suspended from the ceiling of a shop four superb stone-pointed arrows, which I was not long in transferring to my stock, at fifty cents each. I was informed that they were made by Indians in that vicinity.

When about a year ago I began my researches as to the survival of primitive aboriginal art, my thoughts, of course, recurred to Mr. Robinson and his aboriginal neighbor, Pitt; and I wrote at once to the former requesting such information in point as he might be able to furnish me. *

I had not long to await an answer, and with the answer came a very pretty mounted flint arrow head, fresh from Pitt's workshop. I am indebted to Miss Annie E. Robinson, my friend's daughter, for the following valuable information respecting my inquiries:

"Father dislikes so much to write, that I have undertaken to do so for him. It was much of a surprise for us to hear that societies that make research in this field a specialty should think that the making of stone implements is "a lost art" with the Indians to-day. Many Indians can still do such work; and we mail you with this a flint arrow head made by Pitt, the Indian that re-pointed the arrow-shafts for you. He smiled when father asked him whether he could do such work, and said he wished he could sell all he could make. Mr. Benjamin Blockburger, whom I think you have met, also told us that the Indians about Blocksburg could be engaged to make such articles of any size and in any quantity. I taught school on the Klamath, where a great many Indians lived. These people made arrow-heads and pieces of black, red, and white flint in solid colors, ranging in length from three to twelve inches or more. These pieces represented money among

*Mr. Robinson went into that northwestern section of California only a year later than myself and has resided thereabouts ever since. He was one of the party that came to our relief when besieged by the Indians on Hay Fork. His father-in-law, J. P. Albee, was murdered on Redwood Creek by the Indians in 1862, his body being pierced by two bullets and an arrow.

the natives, some of them being held as high as \$60. The owners were very slow to part with the larger specimens. Then, these were rated at such seemingly exorbitant prices that one would need be a very enthusiastic curio hunter indeed to feel like investing in them."

It would seem quite evident that in these "pieces" representing money we have an instance of the survival of aboriginal art, not only as to its manufacture, but also as to its function.

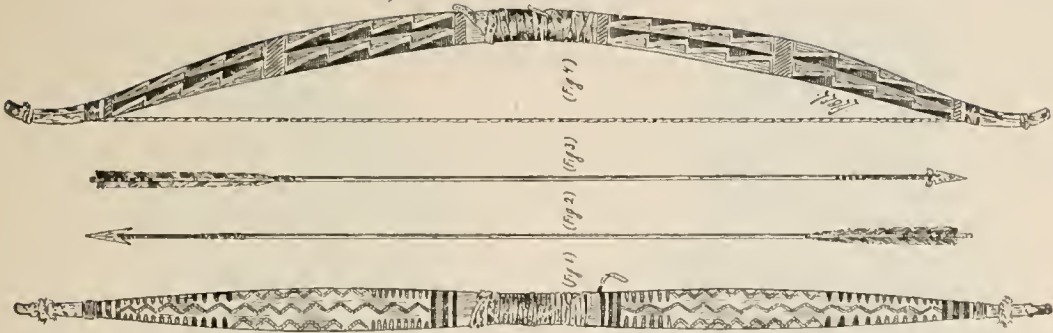
Pitt is now probably not far from 70 years of age; is very conservative; speaks English little, if any; and still sticks to the bow and arrow for small game. I purchased of him a bow of his make, with which it was said he had killed a deer. Chipping stone and making such implements is not a late acquirement with him.* On the contrary he has followed such work more or less ever since his early boyhood, having plied this vocation when his productions were sought not as curios, but as necessities in the everyday life about him. In other words, we may believe him to be an artisan of the genuine aboriginal type—a "living representative" of the "stone age"—an actual instance of the lapping of the prehistoric over the historic, of savagery over civilization.

Indeed, we may reasonably conclude from the evidence, coming as it does from various credible sources, that the aboriginal method or methods of chipping certain stone implements, so far from being a "lost art," is still known and practiced by aboriginal hands; even though the productions of such handicraft have at this day passed well-nigh wholly from the realm of the useful into that of the aesthetical.

D. R. LEEPER.

South Bend, Indiana.

*On the right bank of the Van Duzen, not far from Pitt's hut, there was a large heap of stone chips, evidently the remains of an old-time Indian work-shop. No doubt Pitt contributed his share to this memorial, having lived in this locality all his life except a year or two when he was at the Hupa Reservation.



STONE IMAGES FROM TARASCAN TERRITORY, MEXICO.*

In the December number of the *American Anthropologist* appeared an interesting article by Dr. Cyrus Thomas on stone images from mounds and ancient graves of our southern states. The author called attention to "a somewhat conventionalized form indicative of local origin." Some eight specimens were described or referred to, four of which were illustrated in the paper. Two others of the eight, while not pictured by Dr. Thomas, are figured in Thurston's *Antiquities of Tennessee*. There are but two points in which all of the eight agree—(1) the sitting posture and (2) the slanting, upraised face. The position of the hands and feet varies considerably. In three out of the eight the lower part is said to be incomplete—but rudely, if at all, worked to shape. General Thurston's specimens are notable in the agreement they show in the round, broad faces. The headdress or hair varies considerably. To show this we may tabulate the eight specimens thus:

1. Castilian Springs, Tennessee—fillet.
2. Castilian Springs, Tennessee—cap.
3. Bartow county, Georgia—knot.
4. Bartow county, Georgia—handle.
5. Trousdale county, Tennessee—head bare.
6. Smith county, Tennessee—head bare.
7. Roan county, Tennessee—chignon.
8. Union county, Illinois—triangle incised on back.

All of the specimens are emphatically stated as from within the "stone-grave area." This is likewise the area of the carved or engraved shell-gorgets.

* From the *American Anthropologist*, April, 1897.

Stone figures of a very similar type to this are found in one part of Mexico. In the Tarascan region of the states of Michoacan and Jalisco the seated figure of stone with upraised face is both characteristic and common. We may describe and illustrate several of these. It would be easy to mention many more.

No. 1, from Kalatempa, is in the museum of the state college at Morelia, Michoacan. It is of sandstone and is of indifferent workmanship. The back is nearly vertical and plane. The hands, which are but rudely indicated, rest upon the chest. The lower part is badly made. A small prominence near the base is probably a rude representation of the sexual organs. The face is absolutely comparable with those of General Thurston's figures, being round, broad, flat, and slanting. An incised line across the head (partly concealed by the label) apparently indicates a headdress. The figure is seven and a quarter inches high. (See Fig. 1, plate v.)

No. 2 is from near Tzintzuntzan. It is a sandstone figure of a female. In general character, head position, genitalia, etc., it is much like the preceding. The hands rest upon the chest and the arms are folded against the sides. The headdress, with incised lines at top, is somewhat shown in the cut (Fig. 2). The woman bears a child strapped to her back; the infant faces backward. The height of this figure, which is also in the Morelia museum, is five inches.

No. 3, from Tzintzuntzan, was presented to me by Mr. H. P. McCormick. It is of a reddish-brown stone, in texture much like sandstone. It is very like the two preceding, but the legs are seen to be bent under



No. 1.



No. 6.



No. 5.



No. 7.

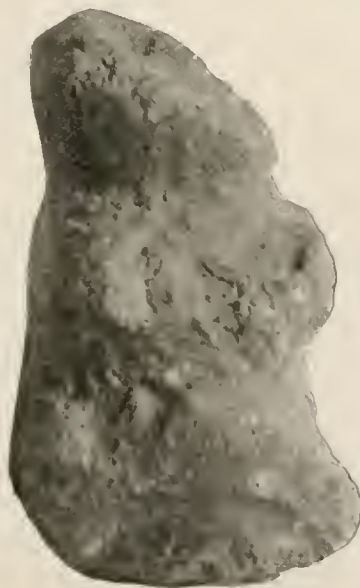
the figure (Fig. 4, plate v). The broad, round, upraised face with eye-holes and mouth simply scooped out, and with low, broad nose, is of the same type as the above and as General Thruston's specimens. There is no cap or headdress. The hands and arms are rudely made, but distinct and in the usual position. The figure measures four inches high. (See Fig. 3, 4.)

No. 4 is the most remarkable piece of work I have seen from Tarascan territory. It is from near Guadalajara, in Jalisco, and was presented to me by Mr. D. A. Wilson. It is made of a fairly compact, olive-gray material. It is a grooved axe. The whole surface is polished; less about the groove than elsewhere. The edge, made with much care, is fairly sharp. The upper end is a finely executed human head, with the face upraised at about the usual angle for this type. The groove comes at the location of the neck, while the arms, carefully defined at the sides, are bent so as to bring the hands—not detailed—to the upper part of the chest. The figure is not squat, but seated, and the bent legs are admirably developed. Examining the head carefully, we find the face broad and round, the eyes carefully worked out, the mouth projecting and with the commissure of the lips marked, the nose well made. Over the head fits a headdress like a close-fitting cap, covering the ears, which cause it to project in two regular rounded prominences. The pictures convey a better idea of this pretty piece than does a description (Figs. 5, 6, 7, plate vi). This specimen measures four and a half inches.

This occurrence in Tarascan territory of stone figures with upraised faces of the same type as the Tennessee specimens appears to me of considerable interest. I have recently called attention to the finding in the same part of Mexico of a beautifully carved shell gorget, strictly comparable with those of the stone-grave area. The occurrence of a second so characteristic type in the two areas is certainly curious.

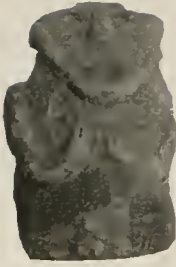


No. 3.



No. 4.

THE STONE AGE IN BRITISH COLUMBIA.



No. 2.

As to the meaning of the upturned face, I am personally inclined to believe that Haygood was right in considering it to indicate adoration. I cannot find in any of the figures given by Thomas or Thruston, nor in the Mexican specimens, any reason for considering the heads artificially deformed; in fact, every specimen distinctly evidences against such a view.

FREDERICK STARR.

Ed. Simpson, of Creal Spring, Williamson county, Illinois, sends us an account of the recent recovery of 79 dark flint, or hornstone, disks turned up by the plow, in the edge of a little creek bottom, a mile and a half from that place. "They were," he says, "about ten inches under the surface, the ground having previously been heavily timbered, and is now in the fourth year of cultivation. The flints were lying flat on each other in a circle of twelve inches in diameter with their points all turned in. They average four or five inches across, pointed at one side and are all new, showing no marks of use. I have found the same kind of flints around here before, as many as ten in a pile, but the plow scattered them so that I could not tell their relative position in the ground. Five miles from here I picked up over 500 fine arrow points in a 60 acre field on a ridge by a bend of the creek. It seemed to have been the site of an ancient Indian village, and scattered all over it were fragments of pottery, pipes, stone axes, mortars, pestles, serapers, etc."

I have never seen an Indian make a stone arrow point, stone axe or any other implement of stone, although they did make and use them long after I came here; not in this immediate vicinity but not far away. The Indians around here, Victoria, have used, since I first knew them, spear and arrow points, and other weapons for war and hunting, made of bone and iron. Originally, of course, their spear and arrow points were made of bone and stone altogether, but, after the advent of the whites, iron soon superseded the use of stone. But bone is still used for such purposes as much as iron. Now about how these implements of bone are made. In order to make any of these points a selection was made of the shank bones of deer, elks and bears, also of ivory; for fine weapons were often made of tusks of the walrus. To split the bones lengthwise a soft substance—such as a bear's skin—was placed on the ground. The Indian firmly held the bone on this with one hand while he struck it with a stone hammer held in the other. If the bone was laid on an unyielding substance, like stone or wood, it would, when struck, be shattered to pieces. The next step was to rub these splinters on blocks of sandstone of various kinds. A number of these whetstones were always kept on hand, and now can be found about every ancient village site, where they have lain for ages.

In this manner were made arrow and spear points, awls, needles and other articles of bone. In the Haida language the name of an arrow point is sumc-a-nitz, and that of a spear point is muc-a-nitz.

When I arrived on this coast, in 1854, the Indians generally made and used implements of stone, such as arrow and spear points, knives, adzes and axes, and continued to make and use them for years after that. The material they used was chert, jade, a black and gray slate, and a dark and gray basalt. I think I may have seen the process of making these articles when I first came here, but am not certain. However, I know pretty well how they were made, at least by the Indians inhabiting this island. A black bear's skin was spread on the

ground with the hair side down; then a flake of chert, of jade, or of basalt, first roughed out by striking two pieces together, was held on the bear's skin between the fingers and chipped into shape with another stone, or a bone, by gradual pressure. In this way they soon formed very perfect arrow heads, some having points as sharp as a needle. The base of the weapon was worked out by simple pressure, then inserted in the cleft shaft and securely held in its place with pitch, asphaltum, or a glue made of fins of the halibut. The larger spear heads were usually made of slate, split into flakes, worked out, and then rubbed until polished. Their adzes and axes were made of chert, jade or basalt, and were of various shapes and sizes. Some of them were finely finished and polished, while others were rough and ill-formed. One class of them were evidently made to be used by holding in the hand, but the great majority of them had handles of some description.

I have never seen Indians cut a tree down with stone tools, but, in 1869, I saw them make a canoe without the use of metals. I have also seen an Indian making boards with only bone and stone implements. The Indians here never used their stone axes as we use an axe; but always as we use an adze. All their cutting is done towards them, and is today, even when cutting with a pocket knife. To fell a tree was for them a long and tedious undertaking in those days. There are in this province two trees still standing which were partly cut down with stone adzes, one at Billa Coolid, on the mainland, and the other on this island at Fort Rupert. While engaged in cutting this last named one the Indians at work heard that white men had come to the west coast opposite. So, prompted by curiosity to see white people, they threw down their adzes and crossed the channel. From this visit they never returned to finish the tree cutting, so the tree still remains as they left it, but is slowly rotting down.

In olden times when an Indian of this region had determined on making a canoe, great or small, he would go into the woodlands and select a suitable tree as near to the water as he could find it, and there, if far from his home, would build a hut to sleep in while at work. If he found the right sort of a tree near his habitation he returned

there nightly until his canoe was launched.

His first step was to clear away the bushes from around the tree and then get together a supply of dry wood. Now, as for his tools. First there were two or more adzes of stone firmly lashed to strong handles; then a number of wedges of bone and wood. Those of bone were made of whales' ribs, and the wooden ones of the yew tree of this coast. They were usually some 14 inches in length, two or more inches in diameter, tapering to a broad edge, and, to guard against their splitting, were bound around the top end with rawhide or spruce withes. Stone hammers or mauls completed the outfit. By hacking, pounding and splitting off the cortical layers, and the aid of fire they finally got the tree down. After it was down it was easy enough to burn it in two at the desired length. By persistently burning, hacking and splitting the log was in time given its canoe shape and hollowed out. By rubbing and scraping—chiefly by the squaws—with disk-shaped stones edged all around, the outside was fashioned and smoothed; when, with skids and poles, it was launched on the water and floated home, or near there, where it received its finishing touches. The most particular as well as difficult part of the whole work was widening the craft to afford more room inside. This was done by softening the wood by steaming. A small quantity of water was poured into the canoe into which a lot of red hot rocks were thrown, and the whole thing was immediately covered all over with mats and hides. When steamed for some time the sides, or gunwales, were cautiously pulled apart, or spread, and cross sticks put in to keep them in that position permanently. Then, lastly, came the ornamentation and painting. The ornamental work consisted of carving grotesque figures on the prow and gunwales. Their paints were lamp black and certain kinds of earths and rocks burned and reduced to powder in stone mortars. Some of their canoes, forty, sixty, seventy feet in length, and from six to twelve feet or more in width, were marvels of perfect workmanship and fine proportions. Some of the trees from which these boats were carved, by fire and stone tools, were cedars three hundred feet high by twenty feet in diameter.

JAMES DEANS.

Victoria, B. C.

THE HOPEWELL GROUP.

WARREN KING MOOREHEAD.

(Continued.)

If my memory serves me correctly, it was Sept. 19th or 20th when we began work upon Mound No. 23—the Oblong. Fig. XV, drawn by Mr. Jack Bennett, after a careful sketch by Dr. Cresson, shows the original structure to have been 155 feet long and 100 feet wide. The field had been plowed east and west more than north and south and therefore the mound appeared externally to be oblong whereas, when completed by the Mound Builders, its length was but a trifle more than its breadth. In Fig. XV, the scale is 10 feet to the square.

At the time of the exploration, it was 14 feet in height, and must have been, originally, about 20 feet high. Three weeks were consumed in making the examination. 39 skeletons lay upon the base line, most of which were accompanied by singular and unique specimens. One or two intrusive burials had been made two feet below the surface, but whether modern or ancient, I cannot say. With the bones of one of these we found some flint implements and stone celts, the latter being quite rude. With none of the intrusive burials did we find silver trinkets, buttons, bullets, etc., such as are reported by Squier & Davis to have occurred in the upper portions of some mounds.

All the skeletons are shown in the diagram ranging from Numbers 197 to 236. When the field work for the World's Columbian Exposition was commenced at Fort Ancient in April, 1891, we began numbering our skeletons and continued the series at the Hopewell Group. I am not positive, but am of the opinion that the first Hopewell skeleton was 145 or 147. Surely not more than 25 or 30 skeletons had been exhumed when we commenced work upon Mound No. 20, in which was recorded the finding of No. 174.

In Fig. XV, 188, 189 and 190, being the intrusive burials, are not shown, as the diagram is drawn from the base line and, of course, shows nothing higher up in the mound. The numbers intervening between 190 and 197 represent skeletons taken from Mound No. 4.

We put three teams and scrapers upon the summit of the mound and removed its entire top down to a depth of 6 or 7 feet. This gave us a level platform something like 150 feet long and 75 feet wide. Then we scooped out a trench nearly as wide at the base line of the mound, directing it, with the mound's greatest diameter, east and west. When within 3 feet of the base line, the teams were removed and started upon the east end of the Effigy and the bottom of Mound No. 23 was dug out entirely by hand.

Students unacquainted with the exploration of large mounds would naturally think that, in numbering a series of skeletons or deposits, we would begin at one end of the base line, calling the first skeleton No. 197 and the last one No. 235. This is done when practicable, but some times it is impossible. Why? Because many interments are in loose, black, soft soil and in case of rain, skeletons so buried and many of the more fragile objects, would be utterly ruined. Water collecting in an excavation naturally seeks the lowest and softest depressions and in the case of an excavation this large, the possibility of such an accident should be guarded against. So, while some of the men began at the east end, excavating to the original base, then working west and throwing the dirt behind, others were taken to points where dark or soft earth was in evidence. Dr. Cresson and Mr. Ralston stayed with the men at the east, while I directed the movements of those detailed to remove such burials as 197, 203, 206, 207, 208, 209, 210, 211, etc.

In order to provide against any accident from rain, I had the flies removed from our tents and carried to the mound. We were thus prepared at a moment's notice to protect the finds. Fortunately no rain came. Afterwards in digging the Effigy we were several times stopped by storms, and found our tents afforded sufficient protection to enable us to remove exposed finds.

In engraving the ground plan, three mistakes have been made, which I desire to correct. Numbers 231 and 232 on the south side should be 201 and 202; 229 on the west side should be 219, and 226 on the north should be 226 A.

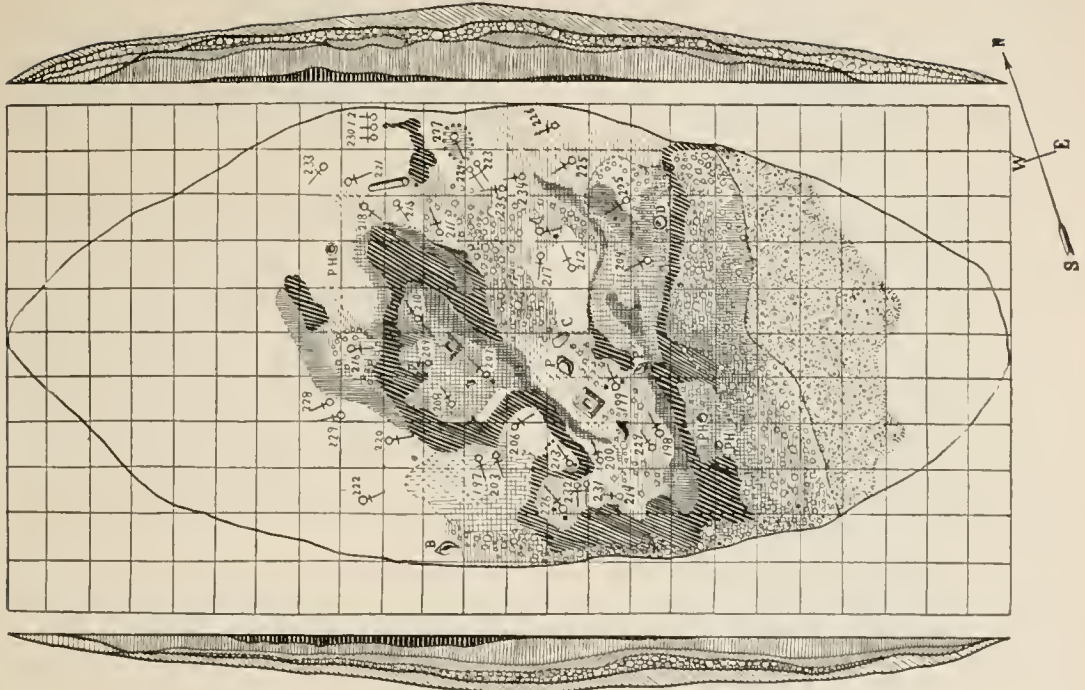


Fig. XV—Mound No. 23 (oblong).

It will be seen that, where two or more skeletons are placed together, the heads are pointed in a common direction. Some of the bodies have been surrounded with boulders, notably 227 and 216. Masses of dark, black earth have been placed about many of the burials; numbers 207 to 210 and the western altar being surrounded by such a layer. This same layer is quite wide between 210 and 215, and over 30 feet long between 207 and 218. It curves somewhat, after the manner of a serpent and ends just below 234. Dr. Cresson thought that it represented a serpent. I have no opinion on the subject and can only call attention to the sharp outline of the streak, which is apparently serpentine. The eastern portion of the mound was covered on the bottom by a layer of small stones. The dotted line drawn across from north to south shows that the boulders east of it are very small, while those lying west, between the dark streak and the dotted line, are larger.

Several post holes were observed in different portions of the mound and are

marked on the diagram as P. H. These may have contained timbers 8 or 10 inches in diameter, which were the supports for a building of some description erected over the hard burnt floor of the mound. Such holes, filled with decayed wood, ashes, etc., have been found in many of the large mounds of the Scioto Valley. In this connection, I desire to suggest that ceremonies, as to whose nature we are unaware, were conducted upon the burnt floor under this temporary structure. After they were concluded, the burials were made and the structure covered with earth.

A peculiarity was observed by both Dr. Wilson and Dr. Cresson. Gravel and clay intermixed seemed to have been subjected to a heat sufficiently intense to form a cement of equal toughness to that of an ordinary cellar door. They thought, and I agree with them, that the oblong mound was constructed at two periods and that when first completed, its altitude did not exceed 10 feet. A few years later, gravel, sand and boulders were heaped upon it to a thickness of 8 or 10 feet in the center. The

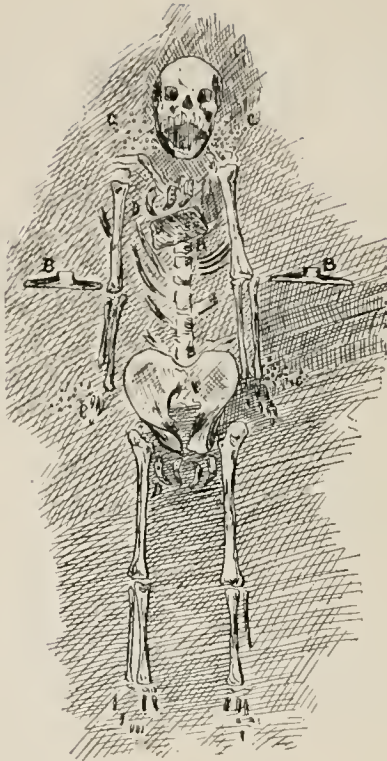


Fig. XVI—Skeleton No. 209; Mound No. 23.

A—Copper plate; B—Pipes; C—Pearl beads; D—Bear tusks.

gravel has since been affected by erosion, and when we examined the structure, we observed the stratum of gravel near the east and west ends to be 5 feet in thickness, while in the center it was but 2 or 2 1-2 feet. The upper part of the mound is clay. Then came a layer of boulders, then an irregular layer of clayey sand, then dark loam, and, upon the base line, the dark streak or deposit referred to, which varied from 1-4 of an inch to 2 feet in thickness. (See cross-section of Fig. XV.)

I shall not list what was found with each skeleton, but condense the field notes and call attention to only the most important finds. Numbers 197 to 200, inclusive, were found near together upon the base line. A large shell and copper ornaments were found with No. 199. Nos. 203 to 209 inclusive were in another group not far from those just mentioned. Skeleton 207 had a

large quantity of pierced wolf teeth and copper ornaments about the head. No. 209 is recorded on the field notes as having a copper plate, two pipes, pearl beads, bear teeth ornaments (with pearls set in perforations), etc. (See Fig. XVI). Skeletons 197, 203 and 206 were considerably charred by fire. Over the fire was a dendritic deposit which had infiltrated from the iron soil above. In places, a crust or coating of this substance had formed over the bones. Two altars were discovered at about equal points distant from the center of the mound. Most of the burials seem to have been made at some distance from the center of the mound. These being on the base line, where Mound No. 23 is not at its greatest height, I will give a little table, showing distances from the surface above to the base line.

Skeleton 197.....	10 feet below surface
Skeleton 198.....	8 3-4 feet below surface
Skeleton 199.....	10 feet below surface
Skeleton 200.....	10 feet below surface
Skeleton 208.....	10 feet below surface
Skeleton 206.....	9 3-4 feet below surface
Skeleton 207.....	11 feet below surface
Skeleton 203....	10 3-4 feet below surface
Skeleton 209.....	11 feet below surface

Dr. Cresson says concerning this mound in the field notes: (Sept. 30, 1891). "Around the skeletons from one hundred and ninety-seven to two hundred and nine it was remarked that many of them were charred, some of them having been laid on hard burnt hearths, others directly in the fire and still others upon baked clay while sufficiently hot to char the underneath portion, leaving the upper portion intact. The iron breccia of this mound, it is much to be regretted, prevented most of the skeletons from being removed, except in fragments.

"No. 213 was especially noticeable on account of the objects found near it. Bone beads, pearl beads, copper spool shaped object on each side of the head and in each hand. Bear teeth, bear tusks, one of which was cut into several pieces. A copper plate and a set of teeth (superior maxillary) from upper jaw which had been cut straight across, just above the alveoli. Another pair of jaws which will be remembered were

found in No. 18, in which the same peculiarity was remarked."

An old man by the name of Acton, who lives near the group and who remembers the work of Messrs. Squier & Davis, states that those gentlemen not only found carved jaws, but also femura upon which were tracings like the delineations on the bone fragments of Mound No. 1. * * * *

Under date of Oct. 2, the following entry was made in the field book by Dr. Cresson: "Five skeletons discovered, all brachycephalic type and in fragmentary conditions on account of extreme old age, charring by fire and earth pressure. Portions of these were laid aside. Numbers of skeletons are 223 to 227, inclusive. Skeleton 219 had near it a pipe, a spool shaped object, etc. Skeleton 224 had fragments of a pipe; skeleton charred. Skeleton 226 had two copper ear ornaments and one button covered with copper, much decayed." * * * On account of high timothy growing over the mound it was somewhat difficult to take a good photograph before exploration. * * * Both the altars in this mound were taken out entire. One was shipped to Chicago and the other to the Smithsonian Institution. Neither of them contained anything. * * * * *

The number of pits or excavations made in the base of the mound for unknown purposes were found to be filled with ashes, charcoal and burnt bone. A seventeen pound copper axe* of beautiful workmanship and a large stone bowl were found in a bed of ashes near the base line of one of the altars. Several large sea shells filled with soft black earth and placed with the apertures downwards accompanied the bowl and the axe.

Students should observe the great number of interments made in the Hopewell Mounds. Not only did Squier & Davis exhume bodies, but, as will be seen by the perusal of our field notes, our party was continually removing skeletons as mound after mound was explored. Did these interments in the tumuli account for all the burials made during the occupation of the

Hopewell Village? I think not. Doubtless many "surface burials" were made on scaffolds or in small structures, and these disappearing under atmospheric agencies have left no trace behind.

If we assume that the mounds, great and small, contained all the dead, how shall we account for the disposition of children's remains, only 3 or 4 of which occurred among a total of nearly 175 skeletons exhumed by our party?

Very few mounds exhibit the stratification attributed to them by early archaeologists. Nearly all the Scioto Valley mounds of the stratified class have layers running horizontally instead of curved (conforming to the contour of the mound.) Mound No. 23 was of this class. Its layers curved very slightly. At each end and on the sides they were somewhat disturbed, owing to cultivation, but in the center they (except the upper one) were as originally placed. Squier & Davis must have dug down to the altars. No mention is made in their report of the excavations leading to the east and west altars, but by the disturbed strata above, we took it that they had sunk two shafts in the tumulus. It is not difficult to trace the excavations of previous explorers in mounds, especially if the hole has been dug to a greater depth than 4 feet. We assume that Squier & Davis made finds in the altars.

An amusing incident occurred during the exploration and it may not be out of place to record it here. Dr. Cresson was very seldom excited by the discoveries and was usually much more dignified in his bearing than the rest of us. But when the large copper axe and the stone bowl were found, he hurried up to camp, procured a huge Colt's revolver which he had brought from the West, and singing an indian song, discharged several shots in honor of the find. The teams working upon the Effigy 200 yards distant became unmanageable, and running down its deep sides, dragged scrapers about the clover field, much to the consternation of our drivers.

It appears that around many of the skeletons little structures of wood, perhaps 3 or

*I shall refer to this axe later.

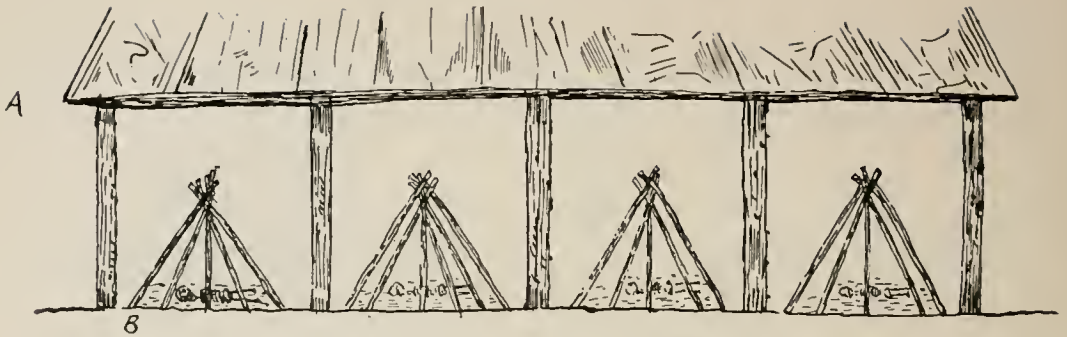


Fig. XVII—Supposed Construction of Building; Mound No. 23.
A—Roof; B—Small structures covering skeletons.



Fig. XVIII—Stone bowl; Mound No. 23. Greatly reduced.

4 feet in height and resembling small wooden tepees or conical lodges, were constructed. Although the timbers or poles constituting the "house" decayed, yet they remained in position long enough to form a hollow about the remains. Consequently the earth was either caked or very loose and we had to be extremely careful with the teams to avoid all such depressions and whenever we noticed them, the horses were removed to another part of the pit.

I have shown in Fig. XVII these small structures and also the large one which I am convinced covered a considerable portion of the interments. It is true that I may be mistaken as to the existence of a large roof covering the smaller structures, and I therefore offer the illustration chiefly as a suggestion based upon the following observations in the Porter, Effigy, Harness, Metzger and other large tumuli in the Scioto Valley.

1st. Some of these post holes yet retained casts or impressions of the timbers that stood in them.

2nd. Arrangement of post holes—surely not accidental.

3rd. Burials, altars, etc., usually "bunched" on the most even portions of the mound floor with post holes around them.

4th. Presence of small pole structures about individual burials, the existence of which cannot be doubted.

When we explored the Effigy we found additional and more remarkable evidences of these temporary buildings, and were enabled to get some light upon the ceremonies conducted under them.

As to the stone bowl shown in Fig. XVIII, I cannot give the exact measurements from memory, but the statement that it is about 12 or 13 pounds in weight, cut out from solid lime-stone, 1 1-4 of an inch thick, 5 inches deep, and 14 1-2 inches in diameter will vary only a trifle from the truth. It is strangely of the type of bowls

found on the Pacific Coast and nothing like it has ever been discovered in our Ohio Valley Mounds.

The large busycon shells shown in Fig. XIX, run from 10 to 16 inches in length and are magnificent specimens. How they could have been transported from the distant southern seaboard to Ohio without breaking is a problem I leave to others. Most of these shells are cut, the "whorls" being removed. Whether used in ceremonies, or as dippers or vessels, I am unable to state. When not placed by skeletons, they are invariably buried in fine white ashes with evident care, the tops being turned downwards.

Except some species of cannel coal and a few shark's teeth, no indications of commerce in addition to that already found, came from the Oblong mound. But the number of other objects, and the pipes, strengthened our opinion that the village contained a great many superior workers in both stone and metal, and we trusted in the Effigy to reveal even a higher degree of culture than that thus far established. After exploring the Oblong, we filled up the excavation and leveled it off. I saw it in June of this year and it is to-day barely 6 feet in height and covers an extent of 300 or 400 feet.

All through these explorations, the owner, Mr. M. C. Hopewell, was exceedingly kind and courteous, and although teams dragged earth about his clover field and did a great deal of damage, he entered no complaint, but told me to continue the exploration. I have often remarked this contrast: in spite of the great value of his rich bottom land, he permitted unlimited exploration, whereas, some land owners will not allow even a hill-top mound, situated on soil not worth \$5 an acre, to be opened.

The teams having reduced the first or east section of the Effigy to within 3 feet of the bottom and being started upon the second cut, the force was moved to that most famous structure, where work was continued from the middle of October into the first week in February.

(To be continued.)

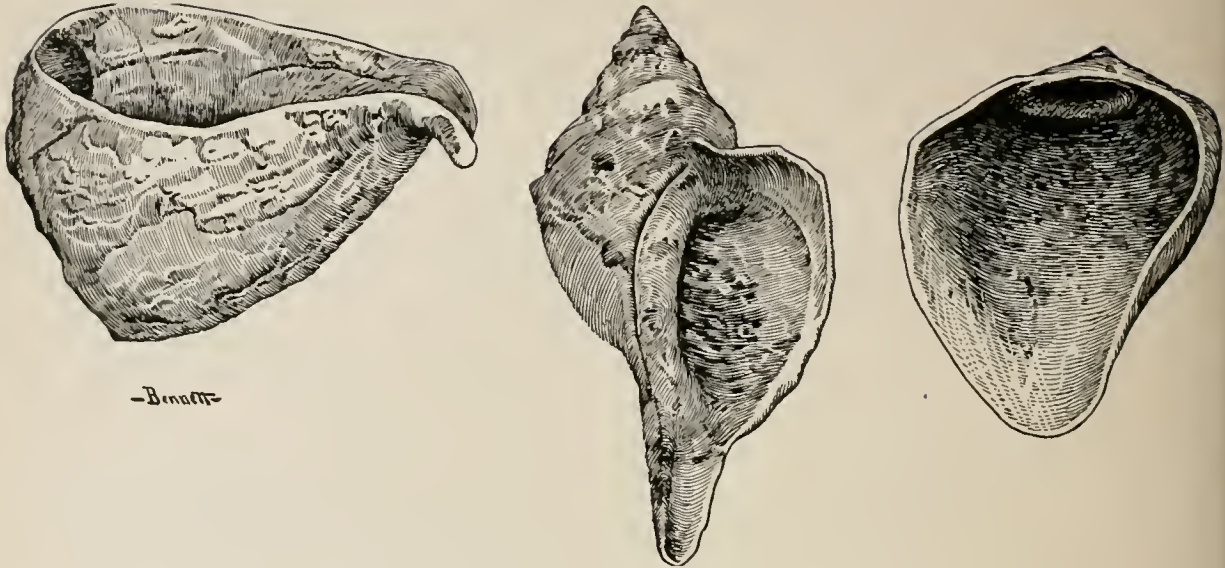


Fig XIX—Ocean Shells; Mound No. 23. Greatly reduced.

A newspaper from Washington, D. C., brings the important information that Professor W. H. Holmes has been appointed to the head of Department of Anthropology, Smithsonian Institution. This is a new office and under it come all the divisions of Anthropology. The article does not state whether Prof. Holmes has left the Field Columbian Museum, but we suppose that he has.

The Antiquarian wishes him all success in his new and enlarged field.

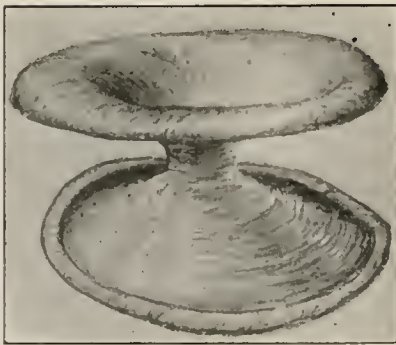


Fig. XX—Copper Spool Ornament, actual size; Mound No. 23.

The American Association for the advancement of Science meets August 9th and continues sessions for a week at Detroit. There will be many very important papers in the Anthropologic Section, and readers of *The Antiquarian* living near Detroit should not fail to attend.

The Princeton professor who was to scale the "Enchanted Mesa" in the South-west accomplished the ascent after much trouble. As archaeologists had foretold, he found no trace of human remains or habitations upon its summit.

*DISTRIBUTION OF INDIAN TRIBES
IN CENTRAL PENNSYLVANIA
IN PREHISTORIC TIMES.*

H. C. MERCER.

Curator of the Museum of American and Prehistoric Archaeology at the University of Pennsylvania.

The Pennsylvanian region between longitudes 76 degrees, 30 minutes, and 79 seconds, in other words, the narrow valley of the Susquehanna on the east, with the deeply valled water shed of its confluent on the west, rolling more smoothly northward, was inhabited at Penn's coming (1682) by tribes of Iroquoian linguistic stock (as distinguished from the Algonkian Lenape of the Delaware Valley on the east.) The Susquehannocks, called variously by the settlers Minquas, Conestogas and Andastes, had held the main river, but were conquered about 1670 by the Senecas, thinned by the whites, reduced to a remnant and exterminated near Lancaster by the "Paxton boys" Dec. 27, 1763. The more northerly Iroquoian tribes, Onondagas, Cayugas, Oneidas, Senecas and Mohawks, and the more southerly Iroquoian Tuscaroras finally allied with the former under the name "Six Nations," after the fall of the Susquehannocks, roamed over the whole region and sold it to the whites by various deeds of sale (sometimes conflicting or done in duplicate to opposing white claimants) giving up Adams, Franklin, Cumberland and York counties in 1736, Perry, Juniata, Snyder, Huntington, Blair, Bedford, Fulton, in 1758. Northumberland, Union, Montour, Lyeoming, Clinton, Centre, Clearfield, Cambria, Somerset in 1768, and Bradford, Tioga, Potter, McKean and Elk in 1784.

Hardly to be counted as original or fixed inhabitants were the wandering Shawnees, (Algonkian) who not only settled in the Pequa valley, Lancaster county, but also must have roamed through the mountain region west of the Susquehanna in pre-Columbian times. The Assiwikales, a southern sea-board Algonkian tribe, coming with them into Pennsylvania, seem to have settled along the Susquehanna and in the

southwestern mountain region across the water-shed in 1731. The Nanticokes (Algonkian) of the eastern shore of Maryland, after being dispossessed of their lands by the whites, migrated up the Susquehanna during the middle of the 18th century, settling with the Iroquois at Juniata, Shamokin and elsewhere, and it seems probable that they built the mounds covering heaps of human bones previously dried (according to their known custom) exhumed by me for the University of Pennsylvania, near Sunbury, at Clemsons' Island and Liverpool. By 1800 they had left Pennsylvania, and dwindled to a remnant of five families among the Iroquois in western New York. The Iroquoian Cherokees may have entered the Pennsylvanian mountain region from the west when (according to their tradition) inhabiting the head waters of the Ohio, while we may suppose that the Iroquoian Eries now extinct, defeated and scattered by the Senecas about 1653, came down into the mountain valleys from their Lake Erie country on the northwest, but there is no positive knowledge as to the number of occupants in the central Pennsylvanian region at the end of the 17th century.

Surviving the extinct Susquehannocks, the forgotten Eries, and the lost Nanticokes and Assinikales, not a few Indians still exist to represent the ancient occupants or claimants of Central Pennsylvania.

Such were 98 Senecas and Onondagas living in 1890 on the Cornplanter reservation in Warren county, Pennsylvania, 255 Senecas in the Indian Territory, 5133 Iroquois (in 1890) in the seven reservations (Onondago, Tonawanda, Cattaraugus, Allegheny and Oil Springs, Tuscarora and St. Regis) in New York. Twelve hundred Shawnees in 1897 in the Indian Territory, and about 2,500 Cherokees in 1890, in the same district.

Little archaeological work has been done in the region in question to identify habitation sites, infer antiquity or estimate the number of population before the 17th century. Mounds now destroyed certainly existed near Wyoming, Rafinesque speaks of others to the east and west of the main river, though I saw or heard of none save

the Nanticoke ossuaries referred to on the main river. Least of all is known of the secluded valleys inclosing the western tributaries of the Susquehanna, though ancient earth works have been reported to me on the Juniata and elsewhere. The Indians quarried rhyolite on the left bank of the lower Susquehanna and I discovered a small aboriginal mine of black chert in Snyder county, on the right bank of the main stream. Indian trails traced by local observers connect streams with streams and valleys with valleys from the northwest branch to the Juniata, while aboriginal rock carvings, probably of no great antiquity, exist on boulders in mid-stream at Safe Harbor and Bald Friars.

When the Lenape were driven out of the Delaware Valley by the Iroquois, they were sent to Sunbury (Shamokin) and Wyoming, and remained in the Susquehanna region until, after siding with the French against the English and Iroquois in 1755, and their consequent defeat, they migrated to Ohio. Some, however, had gone west in 1683. Others had settled near Pittsburg in 1724, and this later residence in and passage across the central region by the Lenni Lenape has somewhat obscured the fact that the earlier history of the district in question pertains to the story of Iroquoian not Algonkian tribes. A few of the villages noted in the latter tribes by scouts, missionaries and settlers, were Chinklaca moose (now Clearfield, Clearfield county), Kisha Caquillas (Mifflin county), Chillisquaque (Shawnee, Northumberland county), Shamokin (Northumberland county, junction of east and west branch), Conosoragy, (Shawnees, seen by Weiser in 1755, near Muncey Creek), Otstonwakin (site of Montoursville, Lycoming county), Quenis chas chaekki (site of Linden, Lycoming county), Wyoming (right Susquehanna bank above Wilkesbarre, Luzerne county), Wyalusing (mouth of Wyalusing Creek, Bradford county), Chingilomalouk (site of Lock Haven, mouth of Bald Eagle Creek, Clinton county), Carantonans (Susquehannock) (Spanish Hill, Bradford county), Ocolui (north branch of Sugar Creek,

Bradford county), Gohontoto (on Wyalusing Creek, Bradford county.)

In an exploration of the Susquehanna Valley from Pittston to Harrisburg in 1892, I found ample evidence of former Indian villages along the main river at the mouths of all important streams, and similar evidence establishes villages at the mouth of Conadaguinnet Creek, Yellow Breeches Creek, on the Susquehanna left bank, one mile below Bainbridge, and right bank opposite Bainbridge, at Caldwell's Island, at Great Island, on north branch above Shamokin, along Conewago Creek, along Tuscarora Creek, near Academia on the Juniata, and at the mouth of the Tuscarora. Probably the Shamokin site was one of the principal settlements in prehistoric times, and those at Montoutsville and the Juniata's mouth would also have been important.

My sources of information are Schoolcraft, Indian Tribes, Historical Map of Pennsylvania, Pennsylvania Historical Society, 1875, Hollister's History of the Lackawanna Valley, Day's Historical Collections of Pennsylvania, 11th Census of the U. S., Report on Indians, Lenape and their Legends, Brinton; History Centre and Clinton County, J. B. Linn; Watson's Annals of Pennsylvania, History of Columbia county, J. G. Freeze; Information of Mr. A. Wanner, York, Pa.: Information Mr. Thomas M. Clemann, Philadelphia; History of the Towandas, C. F. Haverly; History of York County, John Gibson; History of Juniata and Susquehanna Valleys, History of Lancaster County, Information of Mr. Haldeman O'Connor, of Harrisburg, and my own observations in the Susquehanna Valley.

The year of 1897 will stand in archaeological annals as one in which more exploring expeditions have been sent out than in any previous year. All the museums have been unusually active in the field.

NOTES ON A NUMBER OF DELA-
WARE RIVER INDIAN VILLAGE
SITES.

Many of the readers of the Antiquarian may no doubt find brief sketches of the numerous Indian village sites found along the banks and terraces of the blue waters of the Delaware river somewhat interesting reading, I will therefore attempt a description of some of them, giving location and implements discovered on the surface and in trenches dug, as well as other incidents connected therewith as far as have yet been ascertained, and will commence with an extensive prehistoric Indian village site located on the second terrace of the river Delaware on the "Nockamixon flats," in Bucks county, Pennsylvania. During historic times the village was presided over by a noted sachem (named by the whites Isaac Nutimus) from 1700 until the removal of the Indians in 1750 to the Ohio country.

How many centuries during prehistoric times the locality was occupied by savage man can only be conjectured by the aid of the stone implements here discovered by our local collectors.

There are remnants of an Indian burial ground along the edge of the river terrace, where, it is alleged, the grand old chieftain, Nutimus, who was the last of the noble chiefs of the Delaware tribe of Indians along this river, lies buried. His grave has never been disturbed to our knowledge. Nutimus was born in the vicinity of Philadelphia, and it was said of him that he never drank whisky. His name, Nutimus, signifies "A striker of fish with a spear."

Recently the writer, accompanied by Prof. H. C. Mercer, curator of the American Department of Prehistoric Archaeology in the University of Pennsylvania, Philadelphia, Pa., visited the site of this once important camp and dwelling-place of the aborigines, in the hope of clearing up some important archaeological facts connected with the Delaware Valley Indians during prehistoric and historic times.

After a day spent with two workmen digging trenches, we summed up a partly finished pestle 13 inches in length, 2 1-2

inches in diameter, tapering towards each end, the pestle being a post-glacial boulder carved by the Indians to suit their purpose, a fine flaking stone of argillite, 1 1-4 inches thick and 5 inches in diameter, a lot of pottery decorated in conventional Indian style, and some without any markings whatever, several rounded lumps of pottery-clay obtained by these interesting people on the high ground flanking the village and pottery manufactory, a few hammer stones of post-glacial boulders, and numerous flakes of jasper and argillite. The jasper was principally from the Durham jasper quarries and the argillite from the Point Pleasant, Bucks county, Indian Argillite quarries in the Triassic formation, several triangular arrow points, a number of stemmed arrows, etc. Further we were promised by the owner of the village site a finely carved mortar, an elegant stone pestle knobbed at each end, and some celts and axes. Prof. Mercer spent a few days in the vicinity re-exploring some of his earlier excavations, but as he intends to give the readers of the Antiquarian an account of his valuable finds here we will not anticipate.

Mr. Owen Stover, who has lived on this ancient camp site and workshop for probably 70 years, and his father before him since 1812, told us that immense quantities of stone axes, pottery, pestles, insignias, mortars, pipes, effigies, etc., with arrow points of jasper and argillite were found here over an area of over one hundred acres in extent. Large quantities of these relics were destroyed during the construction of the Delaware division canal, which passes through the greater portions of the village site. The canal was constructed by the state of Pennsylvania in the years 1829 to 1832, when prehistoric relic hunters were to a large extent still unborn.

Mr. Benj. W. Burrell has a fine collection choice relics obtained here, a few of which we will describe if the editor of the Antiquarian will allow us space. One is a curious shaped post-glacial boulder of pot-dam sandstone, having the outlines of an ordinary No. 15 shoe lathe, which he claims to have been used by the Indians for the purpose of stretching wet moccasins. Be this as it may, it would have answered the

purpose admirably, it being as smoothly polished by the elements as if just from the hands of a lathe expert. Another is a flat stone about ten inches square, two inches thick, with two saucer shaped cavities chipped on one side. One of the cavities is six inches in diameter and 3-4 inches deep; a smaller one on the same side of about two inches in diameter and 3-4 inches in depth. The latter cavity serving as a convenient thumb-hold when transportation became necessary. The relic no doubt served as a receptacle for crushing and preparing medicine, as the saucer shaped cavities plainly indicate. The third is a hammer stone of unique design, six inches long, two in diameter at large end, tapering to one inch at smaller end. It has with the grooves cut on two sides, 2-3 distant from smaller end, making a convenient hammer-shaped implement. The fourth is an emblem which evidently embodies a myth. This curious wrought stone brings out a few suggestions in regard to the divinities employed or worshipped by primitive man. The stone or emblem is in size about eight by four inches, and was made from a hard triassic shale. On its surface is carved a well defined half circle, crescent shaped, suggesting the moon in its first quarter. Opposite on a line are faint attempts at eyes, with a well defined nose and chin. The dividing line between the upper and lower portion of the relic is well defined by a groove cut completely around it. The carving on the lower portion of the emblem was accidentally defaced in cleaning the stone. *

* The study of this relic is interesting, taking into consideration the position when found. Mr. Purcell tells us that while walking along the first river terrace, he saw a peculiar object among the exposed roots of an old tree on the second terrace, elevated about fifteen feet from where he was standing, and four feet beneath the surface of the second terrace. It shows how strong and prevalent was the religion and mystic sentiment in primitive man; for not only were the commonest carvings in stone weapons, ornaments, decorations, etc., turned into symbols and emblems, but we find that by a gradual and natural process they were devoted to some purpose significant of some hidden thought or custom. These symbols are not alike, some of them having more mythological significance than others, yet all seem to have been raised

The Ruth brothers, of Lehnensburg, gathered several thousand specimens of Indian art at this village and camping place. Their collection, almost wholly gathered here, consisted of arrow heads, stone axes, pipes and pottery of every description manufactured at the local manufactory, the site of which is in close proximity to the camp site. That this primitive industry by the Indians must have been largely and extensively carried on is evidenced by the finds of this dark colored pottery over an extensive territory. In fact we have found this class of pottery mixed with lighter colored on almost every Indian camp site within a scope of many miles.

Other collections in the vicinity have many unique and interesting objects of prehistoric art obtained in the vicinity an enumeration of which would be too burdensome to the reader at this time. †

We will merely call the attention of the readers who have thus far followed us to a few outlying camp sites, which were evidently lookout or picket camps located in convenient localities for observation, and sending out signal parties apprising the river Indians on the lowlands of danger.

As far as our investigation of Indian and prehistoric camp sites have been extended we have learned that all or nearly all of the more important and larger prehistoric camps and villages were fortified by having either observation mounds erected, or outlying camps in convenient localities on the high grounds, where opportunity offered to observe a large scope of country.

to a level where they were more or less significant objects during their carnivals. We find mythologic emblems in nearly all of the Delaware river prehistoric village sites, carvings in stone, resembling birds, animals of various kinds, pipes resembling tubes, etc. The significance of which are interesting to the student of prehistoric art, as well as suggestive, but all are nevertheless open to discussion.

† One so-called effigy stone found at this Indian town near the river bank represents a species of large fish, probably a Sturgeon, fairly well in outline, carved from a rock of argillite. The owner of the relic refuses to part with it unless he be able to find a duplicate, which to us appears rather dubious. Other unique prehistoric art objects will be noticed in these notes as opportunity offers.

EDITORIAL.

On the high grounds one mile south of the centre of the prehistoric village, and elevated above the second river terrace about 400 feet, near a spring of limpid water, are the remnants and refuse of a prehistoric workshop and picket camp site. Numerous turtle-backs, or so-called rejects of jasper and argillite have been picked up here from time to time. As but little of the camp site is under cultivation the extent of the workshop or arrow-head manufactory cannot with any certainty be described, but the location furnishes an extensive view up and down the river, as well as of the village site under consideration, and a large scope of country east and west.

Nearly a mile south of this latter place is another prehistoric outlying workshop, similarly located but now overgrown with trees and brushwood. Nothing of importance can be learned here without great labor and expense.

About three miles due west of the former camp site and workshop, it is said, that near a huge boulder of trap-rock, an immense heap of refuse jasper and argillite was recently discovered, but as the country is heavily timbered we have not yet examined into the matter, but may do so in the near future.

CHARLES LAUBACH.

Riegelsville, Pa.

By means of some of William A. Eddy's kites, as well as a mortar and line, Prof. William Libby, jr., of Princeton, hopes to be the first white man to set foot on a tableland near Albuquerque, N. M., which long has been a subject for speculation among archaeologists. It is 700 feet high, and cliff dwellings have been seen along its edges. The kites will carry a line over it from side to side. Should they fail, the mortar will be used to shoot the line over. Then Prof. Libby will be drawn up in a boatswain's chair by his men on the other side of the rectangular height.

Farmer Robinson ploughed up two skeletons, three stone hatchets, beads and several copper bracelets near Jackson, Ohio. They were in a small mound.

In the final chapter of his great work on "The Antiquities of Tennessee," General Thruston says, in conclusion: "The civilization of Peru had declined from its best estate when the Spaniards first appeared and trampled upon the power of the Incas; the Mayas had lapsed into barbarism, and their imposing structures of stone were in ruins, when discovered; the Aztecs were less civilized than their predecessors, the Toltecs; and the progressive race of mound builders, who once, doubtless, formed a strong tribal alliance or confederacy in the Mississippi Valley and adjacent sections, had also probably reached the zenith and decline of their power when Columbus set sail upon his voyage of discovery."

Though facts seem to warrant this pessimistic view, we are inclined to regard it as overdrawn in some respects, and at variance with the generally accepted theory of the gradual evolution of indigenous Indian civilization in America. The sources of Inca, Toltec and Maya culture, if not spontaneous, are inscrutable enigmas. But the progress in art and higher conditions of life made by the mound building Indians, we have every reason to believe, was a development of the innate capabilities of the race. We have substantial evidence that they advanced from wild savagery to a high plane of semi-sedentary barbarism, and that this advancement was still vigorous when they were discovered by Europeans and exhibited no indications of approaching exhaustion. The practice of mound building having at that time measurably fallen in disuse may be construed as an index of increasing intelligence rather than a symptom of retrogression. From roving bands of fierce nomads they had become homogeneous communities with organized governments and strict codes of justice. They had learned to rely on the products of agriculture for subsistence as much as upon those of the chase. They lived in well built houses amply protected by strong palisades, and had begun the use of metals by hammering native copper and meteoric iron. And this beginning was a sure precursor to a more refined use of those materials if

their improving mechanical skill, stimulated by increasing necessities, had not been suddenly supplanted by European arts.

That many of the great stone structures of Peru and Central America were abandoned and in ruins when first seen by the Spanish invaders may not have been owing to decadence of their builders so much as to natural causes. Situated at or near centers of volcanic action their destruction may have been in part the result of severe earthquakes and electrical storms.

It is well to fully consider the facts and possibilities here suggested before reversing the known laws of evolution underlying the growth of civilizations the world over, and consigning our native race to decline and degradation when it had but commenced to emerge from pristine debasement.

BOOK REVIEWS.

The Direction in Which Mayan Inscriptions Should Be Read. Reprint From the American Anthropologist, May, 1897.

The Study of American Hieroglyphics. From the American Antiquarian, Vol XIX, 1897. LEWIS W. GUNCKEL.

In the June number of the American Anthropologist is a paper by Dr. Daniel G. Brinton on "Missing Authorities on Mayan Antiquities," in which he names, by their titles, quite a list of publications and unprinted manuscripts relating, directly or indirectly, to the early Mayas of Yucatan and adjoining Central American states, that are known to have existed but are now missing and probably irretrievably lost. Were these works at present accessible they would throw much light on the marvelous civilization of that people, and serve, in some measure, the office of a Rosetta stone, to unlock the mysteries of the strange hieroglyphics carved on the ancient monuments of that region.

The pretentious alphabet offered by Bishop Landa as a key to the Mayan in-

scriptions was a disappointing failure, but his interpretation of the queer figures representing the days and months of the Maya years, with the subsequent discovery of their calender and numeral signs up to nineteen, have been very important aids in deciphering something of the meaning of those wonderful graven and painted characters. However, the little that has been revealed has been more disappointing than the bishop's alphabet. It tells nothing that can be construed as history or biography; but is all the work of the priests, recording the rites and ceremonials of their mythology, with divinations and forecasts, and times for feasting and fasting; amounting to not so much as modern calenders and almanacs.

The Maya priests had some knowledge of astronomy, and had adopted a complicated system of time division based on a ceremonial year of 260 days, and a solar year of 18 months of twenty days each. They divided the year into seasons, and no doubt paid much attention to meteorology and its influences on their agriculture. Their religion was pagan polytheism, and their worship ceremonial and ritual, including sacrifices, perhaps including that of human beings. They had libraries of codices, or long folders of coarse paper, painted all over with character inscriptions similar to those on the monoliths, illustrated with pictures of priests making offerings, or of their gods, with some unmistakable human victims. These priceless books were all gathered up by the invading Spaniards and piously burned. But four of them escaped destruction and are now extant, so far as is known, and they tell us no more than the monuments do.

In this country Dr. Charles Rau, Prof. Cyrus Thomas, and a few others, have devoted much time to the study of these painted and sculptured inscriptions and made some progress in discerning their meaning. The field for further achievement in this work is very broad and the laborers in it very few. We are pleased to see that Mr. Gunckel has entered it and made a good beginning. His idea of how the inscriptions read—from left to right, and from top to bottom—is altogether

plausible, and his method of analysis in their study is doubtless correct; but this comprises barely the preliminary preparation for the arduous task that can be fully accomplished only after a thorough mastery of the prehistoric Maya language.

The Pleistocene Features and Deposits of the Chicago Area. By Frank Leverett, Chicago, 1897.

This pamphlet of 86 pages, with its several maps and many full-page illustrations, is the second bulletin of the Geological and Natural History Survey, conducted by the Chicago Academy of Sciences. The work was done, and report prepared by Mr. Frank Leverett, of the U. S. Geological Survey force, who has made the surface deposits of the Mississippi Valley a special study for some years, and it is practically exhaustive in descriptions of the superficial formations of a district about Chicago comprising some 1,800 square miles. This work is peculiarly interesting as the territory examined includes the area of changes of level and other geological fluctuations of surface that have occurred since the Illinois River was the main outlet of Lake Michigan.

As an original investigation of local glacial action and the directions and force of water currents, disclosed by the great drainage canal and ancient lake beaches, and as a resume of geological data relating to the great drift sheets of the northwest, it constitutes a contribution to science very creditable to its author as well as to the enterprise of the Science Association of Chicago.

Korean Interviews. By Edward S. Morse, New York, May, 1897.

During a residence of several months in Korea, Prof. Morse, with the aid of a Japanese interpreter, interviewed natives of that wretched country occupying all stations of citizenship, to gain what knowledge he could of the private life, degree of intelligence, characteristics and condition of its people. After giving the substance of his talks with them, contained in sixteen pages, he sums up his conclusion as follows:

"Their government and laws, and their habits and customs, tend in every way to crush ambition, discourage enterprise and industry, prevent work, and in every way retard progress and promote degradation. Concubines are allowed by law and prostitution is protected by the government. Among all classes women are held as prisoners and are in reality slaves, the husband having a legal right to beat the wife at his pleasure. Officials have the right to take the products of the artisan's labor without compensation. The results of the appalling waste of time, the degrading habits of life, the cupidity, dishonesty and oppression of the ruling class is seen in the illiteracy, ignorance and abject poverty of the masses who barely exist and whose only comforts are heat and tobacco."

Annals of Iowa. A Historical Quarterly. Published by the Historical Department of Iowa. Des Moines, July, 1897.

This is a very interesting and valuable number; containing a graphic and well illustrated description of the great cyclone of June 17, 1882, that swept away the town of Grinnell with appalling loss of life and great destruction of property, written by S. H. Herrick, a sketch of the history of Fort Madison, from the U. S. War Department, an account of the Geological Surveys of Iowa, by Chas. Rollin Keys, Ph. D.; "Some Points in Indian History," from the U. S. Interior Department; and several other very readable papers embodying facts connected with the early history of a great state that little more than half a century ago was a wilderness beyond the extreme borders of civilization.

Notes on the Plants Used by the Klamath Indians of Oregon. By Frederick V. Coville, Government Printing Office. Washington, D. C., 1897.

In this "Contribution from the U. S. National Herbarium," Mr. Coville gives a list of eighty-eight plants, ranging from the lofty pines and firs down to wild flax and lichens, that are brought into requisition by the Klamaths to supply in part their needs

for shelter, clothing, food, weapons, tools and medicines. He gives each its scientific, English and Indian name, with its botanical description and specific uses to which it is applicable. The practical value of this treatise is more to science than to the domestic economy of the Indians.

Bulletin No. 1, of the Museum of Science and Arts, Department of Archaeology and Palaeontology of the University of Pennsylvania, Philadelphia, May, 1897.

"The object of this Bulletin," as stated in its announcement, "is the publication of new material acquired by the Museum of Science and Arts of the University of Pennsylvania with accounts of explorations conducted by the museum and original investigations based upon its collections." It is to be published four times a year, "or as frequently as occasion may require." In a word, it will be analogous to the Annual Reports of the U. S. National Museum, also "containing brief papers by the officers of the museum on subjects of general scientific interest." The present number contains two such papers by Dr. Daniel G. Brinton, one on "The Pillars of Ben," and the other identifying the so-called "Bow Pullers" of the Greeks.

This publication fills a long-standing want, and it is strange that its appearance has been deferred to this late day.

The Fourteenth Annual Report of the U. S. Bureau of Ethnology, for 1892-'93, appears in two large volumes, containing altogether three works of superior merit and literary value. The two in the first volume are first, a well-prepared monograph on the Menomini Indians, or the "rice tribe," of the Green Bay region, by Dr. Walter J. Hoffman; the other, "a reproduction of the only authentic known copy of Casteneda's account of the Coronado Expedition," of 1540-'42, by Prof. George P. Winship, of Harvard University. An extended account of the Ghost dance religion and the Sioux outbreak of 1890, by James Mooney, monopolizes the second volume.

As is usually the case with government reports of this kind, these volumes are finely

illustrated with maps, cuts, and many full page plates and printed in superlative style.

"History of Ancient Peoples." Willis Boughton, Ohio University. Published by G. P. Putnam's Sons, N. Y., for sale by A. H. Smythe, Columbus, Ohio.

A very carefully prepared and illustrated volume of 541 pages. His preface explains why he has covered a field already occupied by many historical writers.

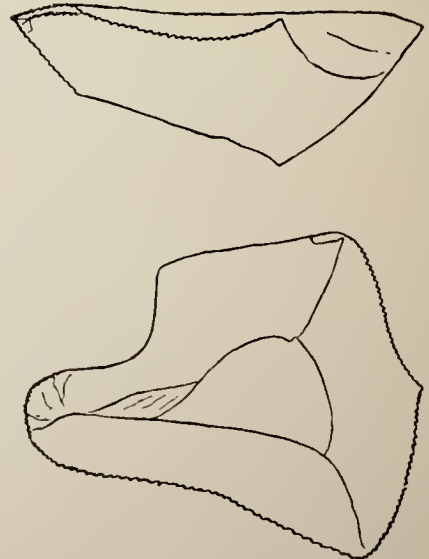
"A generation ago the history of ancient peoples was regarded as settled. It was pronounced a useless task to try to improve the various existing records. But man was bent on finding the lost cities of the past, and on walking the streets of Troy and Nineveh. Desolated regions were explored, and vast libraries of buried treasures have been unearthed. Thus in the last two decades many pages have been added to the historic records. History has constantly to be rewritten."

He treats of all the nations of antiquity, adding much to already published volumes by quoting from Petrie, Maspero, etc., our great Asiatic explorers. Quite a section is given to American antiquities. Students and professional men generally will find the volume of instructive value. C. L.

CORRESPONDENCE.

Editor of The Antiquarian:

In response to the suggestion of Mr. Karl Dilg, in the May number of the Antiquarian, I wish to report the recent finding of a pair of characteristic specimens of the "Chicago Crescent." One is of indurated clay slate, and



measures four by five inches, having one edge deeply indented by chipping skilfully executed, producing a sharp cutting edge. One edge of the plate is worked off to a broad convex cutting edge, after the manner of a scraper. Number two is five by six inches, having the typical indentation, but in this case presenting an angle of the plate shaped to a point, now somewhat battered. This specimen is of sandstone. The field lies in the outskirts of the city of

named stream. These last named implements correspond with Dr. Wilson's description of the Chellian type of tool, but are all, so far as discovery has proceeded, chipped from sandstone.

There is an entire absence through this area of any of the well known forms of modern Indian implements, knives, spears, arrows, etc. But there are scores of these ruder forms to be found in the superficial layer of glacial boulder clay about these slate ledges. They are all of one type, and present characteristics quite distinct from those of any other relic of the stone age that I have noted in collections, or seen described anywhere. They are nearly oval shaped with flat bottom, abrupt bevels rising to a sharp spine or ridge on the top, which branches near the base, continuing down the bevel to the cutting edge on that end. The cutting portion is on the sides and point, never wholly at the broad end. Sometimes the base is blunt and thick, but often the edge circumscribes the object.

These proportions form a broad, thick, pointed, rather handsome tool, ranging in size from 3x1 1-2x1-2 inches, to 5x4x2 1-2 inches. All are formed by chipping. I have a handsome two-pointed specimen, 3x1 1-2x1, which has been produced by four blows of the chipper.

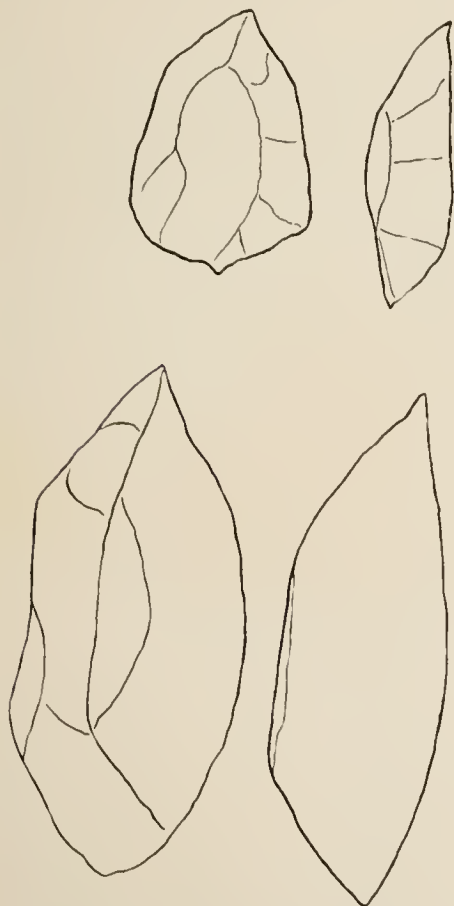
I enclose rough sketches of representative specimens of this tool, drawn in half size, and would be glad to know through the excellent Antiquarian whether other collectors have come upon similar objects.

P. S. Since writing to you a few days ago about the "Chicago Crescent," I have found a still finer specimen, a cut of which I enclose, half of actual size. This combines crescent point and knife in one handsome implement. It was found on the same ground as the others reported. The material is black flint, richly stained from age a mottled green and yellowish color. Some accident has recently struck off a flake from the crown, which without injury to implement, discloses its material and depth of stain. The working of the crescent feature has been carefully and delicately executed, presenting on the under, or flat surface two delicately graded bevels, each one-eighth of an inch in width, and on the upper surface also two bevels, one abrupt, having the appearance of a thumbhold, the other reaching the edge by gradual slant.

O. C. AURINGER.

Troy, N. Y.

Troy, N. Y., three miles east of the Hudson river, near the small tributary creek of Wyantskill. The implements are found associated with objects of peculiar pattern and ancient manufacture, which lie scattered over an area of more than two hundred acres among the slate ledges along the banks of the above



RECENT DISCOVERIES.

The Ohio Archaeological and Historical Society has been exploring opposite Bourneville, Ross county, Ohio, along Paint Creek. The survey discovered a village site of great extent. Continued digging showed that thirty acres had been occupied. This represents a population of 2,000 or more people. About four feet below the present surface many deer, buffalo, turkey, fish and bird bones are found, also a large quantity of ashes, fragments of pottery, mussel shells made into hoes, and flint implements.

Several hundred beads, bone awls, an effigy pipe and other relics were found. An enclosure surrounds the village site and a mound on the same farm was explored by Mr. Reynolds, of the Bureau of Ethnology, ten years ago.

Quite a good sized party is in camp and proposes to continue on down Paint valley, then to work east into Jackson, thence north to Wayne or Holmes counties. It will probably be October before the survey ends its labors.

ARCHAEOLOGICAL FIND IN GREECE.

An important archaeological discovery has been made near Thermopylae, between the old barracks and the water mills. While making excavations there were laid bare a number of sarcophagi, containing bones, vases, coins and medals. It is believed that the skeletons are the remains of some of Leonidas' Spartans.

REMARKABLE FIND MADE ON A BARREN ISLAND IN THE PACIFIC.

Long Beach, Cal.—After nearly three weeks' sojourn in the barren island of San Nicholas, a party of relic hunters has reached Long Beach.

The party found eighty-seven skulls buried in the sand of the island, but were only able to secure three entire. They made one excavation twenty feet square, in which they found nine skeletons in a crouching attitude, as though men, women and children had been buried alive. In another place they found the remains of hundreds of bodies that had been buried. Evidence was found that the islands were inhabited by two or more different tribes.

BURIED CITY DISCOVERED IN MEXICO.

Oaxaca, Mexico.—J. L. Hebrahn, a German archaeologist, has arrived here from an extensive exploration trip through the state of Chia-

pas. He reports finding another ancient buried city situated in the depth of a tropical forest, about sixty miles west of the Guatemalan border. He brought with him here a number of relics from the place and states that he will go to the United States from here and thence to Germany, where he will organize an expedition for further research in Chiapas.

ANTIQUITY OF THE PIPE.

Archaeologist J. D. McGuire, of the National Museum, announces his discovery of the fact that the ancient Romans smoked. Of course they knew not tobacco, which is a plant native and peculiar to the new world, but they used several other herbs, and of these four have been definitely identified by Mr. McGuire. This news upsets the long accepted theory that the practice of smoking was invented by the American aborigines and was unknown elsewhere in the world until after the landing of Columbus.

Unquestionably smoking had already been practiced by the Indians for centuries when Columbus first reached these shores. It was with them to a great extent a form of religious ceremonial. Dr. Daniel G. Brinton, the famous ethnologist, thinks that it had its beginning in the blowing tube of the medicine man. Ignorant savages are disposed to regard the human breath as possessing magical properties, and it may be supposed that burning leaves were introduced into the tube for the purpose of making the breathing visible. The Indians smoked many kinds of plants, such as sumac, red willow bark and the leaves of the kiunkinick or bear berry, and tobacco doubtless was a discovery resulting from a selection of the fittest.

The earliest Indian pipes were simply tubes, in one end of which the tobacco or dried leaves were put. Mr. McGuire finds that the pipes used by the ancient Romans were made on the same plan, the bowl being an invention reserved for a comparatively recent day.

The series of papers presented in our pages from the pen of Prof. Warren K. Moorehead on his exploration of the remarkable mounds known as the Hopewell Group, are, as we had anticipated, attracting widespread attention. Those we have so far published had before, to some extent, reached the public in other mediums, but the parts that are to follow will comprise the most interesting portions of his report, never yet published, and will be illustrated with a number of new drawings. Altogether these papers will reveal the most marvelous record of the pagan cult and mystical rites, as well as wonderful remains of the arts of the mound-building Indians yet discovered in the United States.

THE ANTIQUARIAN.

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THE MONTEZUMA CASTLE REPAIR EXPEDITION.

Arizona abounds in wonders, stupendous enough in grandeur to satisfy the most exacting investigator. The imaginative embellishments of the pseudo-scientist, the romancer, and the much-traveled book writer can be dispensed with. Commercially and socially Arizona is a part of the United States, but in many other respects it is very dissimilar. Here mountain and valley, desert and fertile field lie in such close proximities as to present a varied and pleasing contrast. Here the old and the new join hands over a long period of unwritten history. The agriculturist of today grows his products, in many instances on sites of former villages and cities that have been for hundreds of years the home and hiding place of wild beasts and venomous reptiles.

These varied features are perhaps not more markably presented in any like area on this continent, as they are in that section known as the Verde valley and along the tributaries of the Rio Verde in Arizona. In picturesqueness of scenery this valley has few, if any, superiors in any country outside of the Grand Canon of the Colorado. In addition to the natural beauties presented this section is still, but to a less extent than formerly, one of the richest fields for archaeological research on the continent. There is but little left for the curio hunter, but for the earnest student, the real investigation, the cliff, cavate, and the pueblo

ruins, will present a field well worth his time and study. Fortunately for real students, the vandals could not carry these away, though they have despoiled them more or less in their search for something—anything that would bring a price from the curio dealer or collector.

It has been my good fortune to visit this favored section several times and to study, to a limited extent, some of the prehistoric ruins. The last of these visits was made on the nineteenth of May, 1897. In company with Mr. J. A. Rokahl we left Prescott early on the morning of the nineteenth and drove through over mountain roads fifty miles in one day, to Montezuma castle, our point of destination. The object of this visit was to repair the damage done this magnificent monument of antiquity by time and vandals. The repair and preservation of this fine old ruin was suggested by Mr. Frank C. Reid, of Flagstaff, Ariz., Vice-President of the Arizona Antiquarian Association and an enthusiastic and energetic student of archaeology.

The general formation of the country embraced in these observations is sedimentary, cut by numerous deep, narrow canons, the walls of which present many caves and rat holes turned on their side, affording suitable places for primitive man to effect a lodgment and make for himself and family a home after the fashion of his day. The builders of Montezuma castle selected for their home one of the most commodious of

these caves on the west bank of Beaver creek, situated about three and a half miles above its confluence with the Rio Verde. The cliff in which Montezuma castle is situated is about a quarter of a mile in length and about two hundred feet high above the creek bed. The castle is not the only ruin in this cliff, but the largest now standing, about four hundred feet below the castle there remains evidence of another extensive ruin long since fallen; other ruins of smaller dimensions than the one to be described still remain in a good state of preservation and from the valley below look like swallow nests built high up in the cliffs.

Montezuma castle, so called for lack of a better name, is truly a castle in proportions. It contains twenty large and eight small rooms besides a number of closets and alcoves evidently used for store rooms. What the original dimensions of this building were is purely conjectural as a portion of it has already fallen and now forms a part of the talus at the base of the cliff.

I have not noticed in any of the published accounts of this ruin any measurement indicating its height or dimensions. In order to obtain accurate data, I used a tape line for that purpose and found that from the ledge of rock upon which the base of the castle rested to the intersection of the talus was fifty-five feet. If a level were run from the creek to an intersection of the perpendicular cliff, it would approximate one hundred feet to base of castle. The castle measures forty-eight feet from base to summit, being five stories in height.

The tower shown in the right center of the illustration was originally much higher than at present and about twelve feet square and at the time of our visit was in a tottering condition and very unsafe for workmen or visitors, much of the foundation especially at the right hand corner had given way, due to the excavations of

curio hunters. The walls of this building were all constructed of stone and mortar, made of the native cement. Time has amply demonstrated the character of the work and workmen. It is the general impression that the cliff dwellers were an ignorant, savage people, the records left in this and many other such structures do not warrant such an opinion. Whatever their condition or plans in the scale of civilization, they knew how to build a house that would stand. In the outer rooms a sufficient number of openings were left for light and ventilation. The floors perhaps are the most curious of any part of the structure. Great logs, twelve to fifteen inches in diameter, were used as joists for the second, third and fourth floors. These run from the outer wall to the cliff, some of them are laid on ledges suitable for anchorage, and there made fast with stones and natural cement, the outer end being made fast in the wall. These logs are placed every six or eight feet. Then another set of logs three or four inches thick are laid across these. Then comes a layer of willow twigs six or eight feet in length, every three or four of these twigs are bound together with yucca fiber, tied with a square knot and at equal distance so that the ties are in a perfect line from one side of the room to the other. On the top of this comes a layer of bamboo, pieces of which are long enough to reach across the room. On top of this is a layer of cedar bark, and the whole is covered with about two inches of adobe with a thin layer of cement. In these floors we find the raised portion for sleeping purposes exactly like the pueblos build today.

This description is applicable to all cliff houses of more than one story. Accessibility to material and environment may and doubtless does modify construction. When we consider that all this timber was cut with a stone ax and together with the stone and mortar was elevated more than



Montezuma Castle, Arizona.

fifty feet, along a perpendicular cliff wall, we may form some idea of the immense amount of labor required to successfully construct such a building in such an uncanny and inaccessible place.

The upper story is without a roof, the overhanging rock answering that purpose admirably. The walls are built up to within about three feet of the roof of the cave, so that neither wind, rain nor sunshine ever reaches this part of the building.

Throughout the entire building one will find objects that give an air of freshness, such as finger marks in the mortar, the new look about the cut surface of the wood, the floors, etc., that makes one feel almost acquainted with the builders of this wonderful place, and that it had not been long uninhabited by human beings. Then when we consider the great accumulation of debris, droppings from birds, rats, bats, etc., to the extent of two and a half to three feet in depth all over the floor, we realize

that it must have been ages, centuries perhaps, in accumulating.

In some published account of this ruin it is stated that the building is of adobe and the timbers used are all of red cedar. These are very erroneous and misleading statements. The building is, as before stated, made of stone and mortar and the timbers grew along Beaver creek. They are ash, sycamore, hickberry and the like. There is very little cedar in the building and that is white cedar, as there is no red cedar in this part of Arizona, if, indeed, there is any in any part of it.

Owing to the failure of the nineteenth legislative assembly to appropriate money for the repair and preservation of our antiquities, the Arizona Antiquarian Association took this matter in hand and raised, by subscription from members and others, a sufficient fund to repair this ruin. The work of repair is much easier described than performed. Over 3000 pounds of material were used, natural country stone, iron rods, some of them over twenty feet in length and an inch thick, were used to an-

chor the structure to the cliff, corrugated iron covers all the outer exposed rooms replacing the original roof, which had fallen. Breaks in the walls and niches that had fallen out were replaced.

The approaches are all of first class material and workmanship and securely anchored to the cliffs, so that all danger of falling from this giddy height is entirely abolished. Suitable stairs have been built and put in place, affording easy and safe ascent and descent from one story to another. The debris has nearly all been removed so that ladies and children can enjoy a day's outing with pleasure, safety and comfort. All this work has been done with the idea to restore and preserve what remains of this famous old ruin with as little change of appearance as possible. There are many questions that students would like to and do ask about the builders of this cliff house and for the benefit of those who have not and may never have an opportunity of seeing this ruin, I would say that very little is known, and what knowledge we do possess has been obtained by comparative study of living races. As a result of this prolonged, laborious and unsatisfactory course, it may be stated that the cliff dwellers were the ancestors of the present pueblo, or village people of the southwest. That the cliff house period preceded the cavate house and the cavate preceded the village building on the mesa. These periodical changes were not abrupt or well-defined, but were subject to the laws of evolution, one gradually emerging into another. Some are very old, others comparatively modern. Of the age of Montezuma castle nothing is known and any opinion on that point would be purely conjectural. It is conceded, however, by all competent archaeologists who have examined the ruins in this section, that this castle is one of the oldest and that this valley was probably uninhabited in 1540, when Coronado, the Spanish desperado and robber, made his famous expedition through the southwest in search of the seven cities of Cibola that he might conquer their inhabitants and carry away their reputed wealth.

DR. J. MILLER,
President Arizona Antiquarian Association.

*PROCEEDINGS OF SECTION H,
(Anthropology.)
Detroit Meeting, August 9th-14th, 1897, of the
American Association for the Advance-
ment of Science.*

I can truly say that of all the meetings of the Association which I have attended, this one has been productive of the most information. I have talked with many members and they all agree that the session of Section H was more interesting and presented a better series of papers than had been read at any previous meeting.

Of the greatest importance was the discussion of the Trenton gravels and sands in which implements of supposed glacial antiquity were found. I shall not treat of the other papers at length, only mentioning a few of them. I do this because of lack of space. Every paper read was of interest and importance, and I regret that I can not speak of each one specifically.

The sectional committee (of which I had the honor to be a member), arranged the program somewhat differently from that of former meetings. Tuesday afternoon we had papers upon Folk Lore. Wednesday morning we read upon Mexico and Central America; Wednesday afternoon the Trenton discussion in which the geologists joined, having adjourned their Section in order to hold joint session with us. Thursday morning papers were read upon United States archaeology, and Thursday afternoon we treated of general anthropology. Friday morning and afternoon we presented the sociology papers and others which had been left over from previous sessions.

Of the meetings aside from Wednesday afternoon, the papers by Dr. Anita Newcomb McGee on Koreshanity, a Latter-day Cult; Surveys of Ancient Cities in Mexico, by Professor W. H. Holmes; The Import of the Totem—a Study of the Omaha Tribe, by Miss Alice C. Fletcher, received special attention. They, along with nearly all the other papers, will be published in full in "Science" and in pamphlet form.

In 1893 at Madison, Wis., we had somewhat of a discussion of Palaeolithic Man, which waxed very warm. Thursday a joint debate, participated in by the "giants," both in geology and anthropol-

ogy, was free from any personality, was conducted in the most satisfactory and gentlemanly manner possible and resulted in a clear and definite understanding on the part of everyone present as to the exact evidence for and against the proposition that finds at Trenton indicated the presence of glacial man.

Although for four hours some three hundred persons listened to these papers and the ensuing discussion, only the most respectful and absorbing attention was given to the speakers. Everyone seemed to realize that it was the most thorough presentation of the case ever offered, and on that very afternoon we were to reach a definite conclusion concerning a problem which has been a thorn in the side of all scientists.

I herewith append the entire program presented Wednesday afternoon. I will say in explanation that the discussion followed the reading of the last paper. As the papers are to be published, I will simply treat of the discussion itself.

Early Man of the Delaware Valley. By Prof. F. W. Putnam.

On the Implement Bearing Sand Deposits at Trenton, N. J. By G. N. Knapp.

Implement Bearing Sand Deposits at Trenton, N. J. By H. B. Kummel.

Discussion of the Relics from the Sand Deposits on the Lalor farm. By Prof. G. F. Wright.

Archaeological Researches in the Trenton Gravels. By Prof. W. H. Holmes.

Report of an Examination of the Trenches Dug on the Lalor Farm, July 25-29. By Henry C. Mercer.

Investigation in the Land Deposits of the Lalor Field. By Prof. Thomas Wilson.

Geologic Age of the Relic-Bearing Deposits at Trenton, N. J. By Prof. R. D. Salisbury.

Professor Putnam opened the discussion by referring to the work done by Mr. Volk, who has been laboring for ten years under his direction on the Trenton field. He spoke of the results of Mr. Volk's work, of the great trenches which he had dug. He

exhibited charts and diagrams relative to the Lalor Farm finds. He said that it rested with the geologists to settle the age of sand deposits in which argillite objects were found. He himself thought them to be very ancient, if not glacial. Professor Wright read a long paper accompanied by diagrams and specimens. He controverted the statement of Messrs. Knapp and Kummel that the sand was deposited by wind. There were too many pebbles of large size. He concluded that the sand layers were deposited at the end of the last glacial period by water.

Many of the speakers during this session spoke without notes. Professor Holmes, however, read a paper illustrated by the best and simplest and most convincing diagrams which I ever saw. The paper was clear-cut, to the point, and we all agreed that it was the masterpiece of the entire discussion. It was so written that without losing any of its dignity or strength, the youngest and most unexperienced person present could readily comprehend. It not only summed up the results of his past explorations, but also presented a number of new and striking facts. For myself, I could not see how that Messrs. Wright and Putnam could satisfactorily explain the finding of no implements in the great sewer trench. Holmes' assistants spent five weeks in and about this sewer and were unable to find a single implement in it. Professor Holmes thought that the finds were not indicative of glacial man, but that an argillite workshop had been covered by sand through wind agencies.

Professor Salisbury argued from a geologist's standpoint, concluding that the deposits were not of glacial origin. Professor Chamberlain said that the question had narrowed down to a discussion of sand layers three to four feet thick. There need be no argument relative to the gravel layers themselves. That had been settled, he said, and the evidence (Holmes' observations on the long, deep sewer trench) was against implements having been found in them. He said that this thin sand deposit could hardly be considered to furnish evidence of glacial man.

Professor Putnam, in final remarks, felt repaid for his twenty years' work at Trenton. He stated that two men did find two implements in gravel and that seven or eight were found in the railroad cut in what he believes to have been glacial gravel. Having found one implement himself back of a large boulder, he says that almost any geologist would consider it glacial. (At this statement Geologist Gilbert shakes his head.) Prof. Putnam spoke of a human skull having been found thirteen feet deep. Professor Salisbury (replying) said that he considered the position of Professor Holmes as the correct one. As to the implement behind the boulder, its presence may be accounted for by one of Professor Holmes' suggestion (the roots, burrowing animals, etc.); a geologist would not say it was glacial. He used the term "most assuredly not."

Professor Holmes said that, as it is, we have no significance or foundation whatever for the statement that there is a difference of a marked degree between the implements found in the upper and lower strata. It is hardly probable that the original observers knew that the disturbed gravel in the talus slopes often extend to the depth of twenty feet or more. He objects to the term "argillite culture," used by Professor Wright and says that such a term being employed, conveys a wrong interpretation. Chairman McGee, in closing the discussion, well said that fifteen years ago nearly all archaeologists regarded the evidence as conclusively proving the existence of glacial man, but since the observations of the competent gentlemen present have been given to the Section, he thinks that every member will agree with him in the proposition that so far, at least, as the facts presented are concerned, they prove that we have not con-

clusively substantiated the existence of glacial man in America. That no man would welcome such a discovery more than himself, but that until further facts are obtained, he must agree with the preponderance of testimony that the question is settled in the negative.

As a final suggestion I might say that after following this discussion extremely carefully, I can not see other than that Messrs. Holmes, Salisbury, Chamberlain, Gilbert, Cushing, and one or two others have the better of the argument. I have seldom listened—and I have attended a great many scientific meetings—to more logical, concise, accurate and to the point arguments than were presented by the gentlemen I have named.

All of them spoke in terms of compliment regarding Professor Putnam's extended and thorough investigation of the Trenton district. All of them said they would welcome the advent of glacial man whenever his presence was conclusively proved. But the geologists were of the opinion that the sand was not only not glacial, but of no great antiquity, and that these remains should be found not in a bluff along the river, regarding which there would arise an argument, but in a plain country, or in glacial till, or in gravel formation removed from a valley, so that none of these uncertainties should be considered. Until implements were found under such conditions regarding which there could be no dispute, the question must be considered to have been settled in the negative.

Finally, I can not see how any fair-minded man, familiar with either geologic or archaeologic conditions, could take exception to the conclusions deduced by these several and thoroughly competent authorities.

WARREN K. MOOREHEAD.

Detroit, August 13.

*THE METHOD OF MAKING STONE
ARROW-POINTS.*

My first opportunity for observing the survival of the "Stone Age" on this continent was early in the summer of 1850, when, a grown boy, I was in the great caravan of emigrants en route overland to California. At the headwaters of the Humboldt river, some men of the party I then happened to be traveling with started out one morning about daylight in search of horses stolen by Indians during the night. Following the trail to the hills, one of the men left the others and entered a narrow ravine to which he thought the tracks led; but had hardly gone out of sight when his companions heard him call for help. Hastening to his assistance, they found him lying on the rocks, dangerously wounded in the breast by an arrow. Improvising a stretcher, they placed him on it and brought him back to camp; when, on examination, it was seen that he had been shot with an arrow having an obsidian point, that had pierced the left edge of the sternum a little below the attachment of the clavicle. This ready weapon of volcanic glass penetrated the chest and broke, leaving the glistening fragment, two inches in length and nearly an inch in width, imbedded in the bone. A surgeon in the company extracted it with much difficulty, but not with the success that crowned Cabeca de Vaca's similar operation on the Pueblo Indian in 1536; for our man died of internal hemorrhage.

One day in the following September, when camped at the head of Dark Canyon, several miles east of Georgetown, El Dorado county, California, I had gone hunting, and, lured by the novel fauna and flora and grand scenery of that wild region, I wandered some distance into the depth of the great mountain forest, when thirst impelled me to go down one of the numerous ravines for water. While sitting there resting the impressive solitude was suddenly disturbed by a jack rabbit swiftly passing by me and soon disappearing up the opposite slope.

As the graceful little animal leaped across the rivulet a few feet above me an arrow whizzed by, but falling short of its intended victim, struck the ground with the force

of a bullet. Looking around, I was startled at seeing an Indian coming down the hill, with bow in hand, entirely naked, and repulsive in appearance as a wild beast. I grasped my gun to repel an attack, but saw at a glance that he was, like myself, a hunter and not a warrior. Slung over his shoulder was a fine quiver, made of the entire skin of a mountain, or cavity, cat (*Basaris*) *Astuta*), with the animal's head intact at the lower end, and its tail hanging from the top. In the quiver were two beautiful feathered arrows which, I afterward saw, had glistening stone points. Without even a grunt of salutation or apology for his airy dishabille, he stopped at the water's edge and, lying flat on the rocks, drank freely. Arising refreshed, he proceeded to look for the arrow that had missed its aim and which he soon found, after I had pointed out to him the place where it fell. He then searched in the running waters for something that he soon picked out, proving to be a fragment of vitreous quartz. Seating himself on a boulder near me, his next move was to unfasten and unwrap the sinew thread from the end of the arrow-shaft and detach and remove the piece of stone arrow-head remaining in it, for it had broken when it struck the rocky ground. He placed the thread of sinew in his mouth to soften it and render it pliable. Then holding the quartz splinter on its edge with his left hand, on a smooth boulder as an anvil, with a small trap pebble as a hammer, he gently tapped the stone, first on one edge, then on the other, striking off a tiny chip at each stroke until he soon had it reduced approximately to the dimensions he required. He had before seating himself removed his quiver from his shoulder, and at this stage untied from its strap a buckskin string that suspended the point of a deer's horn, seven or eight inches in length, notched or grooved at its small end in a peculiar manner that I had not before noticed. The savage saw that I was intensely interested in his work, and executed every movement deliberately and plainly in my view, as though he felt pride in his knowledge of the stone art. Now spreading the broad tail flap of his quiver in the palm of his left hand, with its inner or dressed side up, he placed upon it the quartz splinter he

had blocked out, and held it firmly in place with the two smaller fingers of the hand clasped over it. With the point of his horn punch he then, by firm and careful pressure, broke from the edges flake after flake from the point of the embryo arrow-head along to its base. Stopping a moment to inspect the stone, he would reverse it and repeat the cautious pressing on the other edge until directly its outline was that of the ordinary leaf-shaped, flint implement. He now reversed his deer-horn punch, when I noticed that it was ground, at its upper or large end, to an obtuse or diamond point at one side, somewhat like that of a wood-carver's burin. Apply this stout point, by the same mode of pressure as before, to each side of the broad end of the stone alternately, the stone now resting for solid support on the heavy muscles at the base of the thumb, he soon chipped out the indented, lateral notches, defining the shank of the arrow-head, which was now finished as completely, and perfectly proportioned, as any I ever saw. Fitting it in the cleft of the arrow-shaft, he took the slender thong from his mouth and soon had the new weapon securely fastened, his horn-punch tied to its place again, and, gathering up his quiver and bow, quickly vanished from view.

The whole process, from his selection of the stone adapted for his purpose to the last tuck of the sinew strand in adjusting the finished implement to its shaft, did not exceed twenty-five minutes of time.

The band of Indians to which this one belonged was known as the Nemshoos,* a branch of the Pah-Utes, generally designated as "Diggers" on the eastern side of the Sierra Nevada range, of whom I will give some further account in another paper. They soon began to visit our camps as persistent beggars, and frequently made arrow-points in our presence, by the method I have described, for the reward of food or cast-off clothing. In this industry—if it can be so called—they were indifferent about the material employed so long as it possessed the cleavage or flaking property required; and from pieces of broken junk

bottles, or other thick glass, soon chipped out as neatly formed and delicate arrow-points as from obsidian or glassy quartz.

So far as my observations extended, these Indians practiced only the one method of making arrow-points of stone. Other Indians no doubt accomplished the same end by different modes of manipulating the same material. Catlin gives us, in his "Last Rambles Among the Indians," the following account of the manner in which arrow-points were made by the Apaches: "Every tribe has its factory in which these arrow-heads are made, and in those only certain adepts are allowed to make them for the use of the tribe.

"Erratic boulders of flint are collected (and sometimes brought an immense distance) and broken with a sort of sledge hammer made of a rounded pebble of hornstone, set in a twisted withe, holding the stone and forming a handle. The flint, at the indiscriminate blows of the sledge, is broken in a hundred pieces, and such flakes selected as, from the angles of their fracture and thickness, will answer as the basis of an arrow-head.

"The master workman, seated on the ground, lays one of these flakes on the palm of his left hand, holding it firmly down with two or more fingers of the same hand, and with his right hand, between the thumb and forefingers, places his chisel (or punch) on the point that is to be broken off, and a co-operator (a striker) sitting in front of him, with a mallet of very hard wood, strikes the chisel (or punch) on the upper end, flaking the flint off on the under side below each projecting point that is struck. The flint is then turned and chipped in the same manner from the opposite side, and so turned and chipped until the required shape and dimensions are obtained, all the fractures being made on the palm of the hand.

"In selecting a flake for the arrow-head, a nice judgment must be used or the attempt will fail; a flake with two opposite or parallel, or nearly parallel planes, is found, and of the thickness required for the center of the arrow-point. The first chipping reaches near to the center of these planes, but without quite breaking it away, and each chipping is shorter and shorter until

*Native races of the Pacific States. By Hubert H. Bancroft, 1875 p. 450. Vol. I.

the shape and the edge of the arrow-head are formed.

"The yielding elasticity of the palm of the hand enables the chip to come off without breaking the body of the flint, which would be the case if they were broken on a hard substance. These people have no metallic instruments to work with, and the instrument (punch) which they use, I was told, was a piece of bone; but on examining it I found it to be a substance much harder, made of the tooth (incisor) of the sperm whale, which cetaceans are often stranded on the coast of the Pacific. This punch is about six or seven inches in length and one inch in diameter, with one rounded side and two plane sides; therefore presenting one acute and two obtuse angles, to suit the points to be broken. This operation is very curious, both the holder and the striker singing, and the strokes of the mallet being given exactly in time with the music, with a sharp and rebounding blow, in which, the Indians tell us, is the great medicine (or mystery) of the operation."

In the Third Bulletin of the U. S. Geological and Geographical Survey is a paper entitled "Methods of Making Stone Weapons," by Paul Schumacher; from which the following extract is taken: "During my rambles among the remnants of our Pacific coast aborigines I had an opportunity, among the Klamath Indians, of gaining information of the manufacture of stone weapons, for which my interest was not a little stimulated by extensive collections made by our party among the deserted hearths of the coast tribes. I had the good luck to meet the last arrow-maker of the tribe, located on the right bank and near the mouth of the Klamath river, who has since joined his forefathers in the happy hunting ground. He showed me the mode of making stone weapons, of which the following is a

description. For the manufacture of arrow and spear-points, knives, borers, adzes, etc., chert, chalcedony, jasper, agate, obsidian and similar stones of conchoidal fracture are used. The rock is first exposed to fire, and, after a thorough heating, rapidly cooled off, when it flakes readily into sherds of different sizes under the well-directed blows at its cleavage. The fragments are assorted, according to shape and size best corresponding to the weapon desired; the small ones, best fit in shape and thickness, are used for arrow-heads; similar sherds, but larger in size, for spear-points; the long, narrow pieces for borers, and so on. To work the flakes into the desired forms, certain tools are required, one of which is a stick, which is in form and thickness not unlike an arrow-shaft and about one and a half feet in length, to one end of which a point is fastened of some tough material, as the tooth of the sea lion or the horn of the elk, and even iron, among the present Klamaths, although the rock does not work as well, and brittles where the edges ought to be sharp. This hard point has a beveled curve, which form admits a gradual pressure to a limited space of the edge of the sherd. During this operation the rock is partially inwrapped in a piece of buckskin for better manipulation, its flat side resting against the fleshy part of the thumb of the left hand, only the edge to be worked being left exposed. The tool is worked with the right hand, while the lower part of the handle, usually ornamented, is held between the arm and the body so as to guide the instrument with a steady hand. With the first movement (as illustrated) larger flakes were detached, and the rock was roughly shaped into the desired form; while with the next movement—the punch pressed at an obtuse angle with the plane of the stone—long flakes were broken, which frequently reached the middle of the sherd, producing the ridge of the points

or knives; and by pressure on the edge at right angles the smaller chips of the cutting edge were worked. The work proceeded from the point, the most fragile part of the weapon, toward the stronger end. To work out the barbs and the projections of the arrow and spear-points, a bone needle is used, four to five inches long, with short, thick point and without a shaft."

As recently as June 27, 1854, Lieutenant E. G. Beckwith* found Indians at the headwaters of Sacramento river, near the California boundary line, who had not yet emerged from the "Stone Age." He says of them: "They claimed to be Pah-Utahs; and were entirely destitute of clothing and armed with superior bows of cedar and long, reed arrows, strengthened by inserting strong pieces of wood in their centers.

* * * * One of them seated himself near me and made from a fragment of quartz, with a simple piece of round bone, one end of which was semi-spherical, with a small crease in it (as if worn by a thread) the sixteenth of an inch in depth, an arrow-head which was very sharp and piercing, and such as they use on all their arrows. The skill and rapidity with which it was made, without a blow, but by simply breaking the sharp edges with the creased bone by the strength of his hands—for the crease merely served to prevent the instrument from slipping, affording no leverage—was remarkable."

It is doubtful if any remnant of the Indian race on this continent still use implements and weapons of stone and are yet without knowledge of the practical use of metals. Aboriginal stone art has perhaps entirely disappeared from America; but there no doubt are many persons yet living who have, as myself, seen Indians as primitive and uncultured in all their methods and practices as any who existed here before the date of America's discovery.

For the advancement of Anthropological Science the observations of all such persons—now approaching the evening of life—should be placed upon record before they, too, pass away. J. F. SNYDER.

*Reports of Explorations for a R. R. route to the Pacific Coast, Washington, 1855. Vol II, p. 42.

AOSTA.

The "Augusta Praetoria Salassorum" of the Romans.

Situated at the head of the Aosta valley, at the confluence of the Doire and Buthier, two mountain streams, is the small village of Aosta in the province of Turin, north Italy, an ancient Roman town which in the olden days was called *Augusta Praetoria Salassorum*.

This valley and surrounding hills was once inhabited by a people very hostile to the Romans. They harassed all troops that crossed the Alps into Gaul over what is now known as the great St. Bernard Pass, and at one time boldly attacked the army of Caesar. The Emperor Augustus afterward sent several legions of the Imperial army under Terentius Varro, up this valley who subdued the tribe after a stubborn resistance; and then as a safeguard, and to hold the territory thus gained, including the pass, he built this small, strongly walled town, now known as Aosta. In my recent visit to Aosta, I was very much interested in the Roman ruins which are very numerous there, and venture to offer a brief account of them to the readers of your valuable magazine.

Ascending the valley road we enter the town through the *Porta Praetoria*, and proceeding a short distance, come to the Arch of Augustus. An inscription at its base, not ancient, however, informed us that the arch was erected to commemorate the victories of Augustus over the native mountain tribes in the year B. C. 24, or in the Roman year 730. I was unable to ascertain the exact dimensions of this grand monument, but estimate it to be not less than fifty feet high by sixty in width and perhaps twenty feet in thickness. Its lower portion is con-

structed of massive blocks of cut stone, many of them seven feet in length and weighing five tons or more. The upper part of the arch is made of brick work covered with stucco. The preservation of this stucco finish, in this altitude, after the lapse of nineteen centuries, is wonderful. Much of it still adheres to the bricks, as though a part of them, in heroic figures, while the greater part of it is smooth and looks and feels like polished marble. At each of the eight corners, and in the middle of each end is a large Corinthian pilaster—ten in all—rising from a few feet of the ground to the cornice above. Like the arch of Titus in Rome, this one has but one opening, approximately, thirty feet high to the keystone of the arch by twenty-five in width. It is indeed a magnificent structure, built to endure the ravages of time and the elements, which so far have made but little impression on it, and it bids fair to last for ages to come if not destroyed by human agency. But a short distance from the arch are the ruins of an old bridge built by the Romans across a mountain stream, which, long after the construction of the bridge, changed its course and cut for itself a new channel. Modern houses now occupy the deserted bed of the river, and but one of the several arches that formerly spanned the ravine—the one nearest the town—is visible, and under that flows the water of a small spring issuing from the ground near by.

The huge old Roman wall can be traced all around the town and in many places it remains as left by the masons who built it. It enclosed a rectangle of about 2250 feet by 1850 feet in extent, and it averaged sixteen feet in height. Its mode of construction was quite peculiar; the material employed being coarse concrete of water worn pebbles five or six inches in diameter set irregularly in cement. This was faced

on the exterior with blocks of cut stone, each two feet long, ten inches high and eight inches thick, the entire wall being five feet in thickness at the base.

At least two-thirds of the original wall remains standing with two splendid gateways of cut stone. There is no doubt that it afforded the place ample protection against the assaults of all barbarian enemies, equipped with only such agencies of warfare as were known at that time. Within the limits of the walled area are several interesting ruins antedating the Christian era; but generally much dilapidated. The most conspicuous of them is the amphitheater, solidly built and of fine proportions, but now in great part buried in rubbish. Of the theatre, a former majestic edifice, all that remains are a few arches, columns and foundation stones.

In many of the cellars of the modern houses can be seen the fine pavements and mosaic floors of the ancient Roman residences. The reason of this is that during the many centuries that have passed since the town was founded and then abandoned by its Roman occupants, the accumulation of soil has raised its level several feet above the ancient surface. It is probable that excavations down to that original surface would bring to light many relics of domestic life of that period of great interest. This quaint old town containing, in its rugged mountain isolation, such vestiges of Roman grandeur and genius of the gorgeous Augustin age, is a shrine worthy of the pilgrim homage of all students of ancient history. It was a military stronghold of vast importance before our Savior's birth, and shared with the Eternal City the splendor of its power and humiliation of its fall. It should be well cared for and preserved as a valued relic of a brilliant age and illustrious people.

D. I. BUSHNELL, JR.

Lucern, Switzerland.

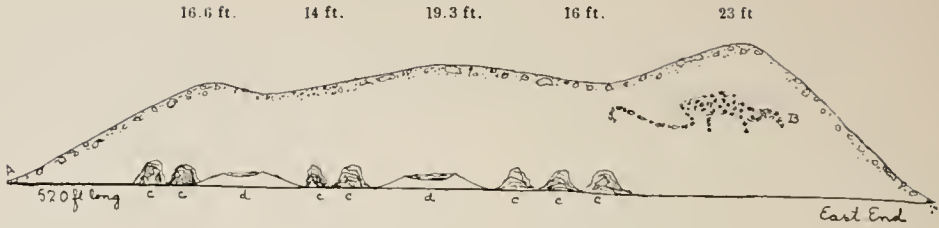


Figure XXI

Side View of the Effigy

A Layer gravel and boulders
 B Effigy or Mosaic of boulders
 C Flint flints in which skeletons were found
 D Altars

THE HOPEWELL GROUP.

WARREN KING MOOREHEAD.

(Continued.)

Dr. Thomas Wilson, Curator of Prehistoric Anthropology at the Smithsonian Institution, visited Camp Hopewell twice. It was during the digging of mound No. 23 that he asked me if I intended to open the Effigy. Some archaeologists had said it was of glacial origin and not artificial. We decided to settle its character, and calling two of the workmen, we sunk a shaft some ten feet in the center. Finding charcoal and bits of burnt earth (slight traces), convinced us that the great Effigy was the work of men's hands. Knowing that it would cost more than \$2000 to properly explore so enormous a body of earth, both he and I thought that it was not a matter to be hastily agreed upon. In spite of the value of articles exhumed up to date, the Chief of the Department of Anthropology was being "punched by the Auditor of Accounts," at Chicago, and he naturally stirred me up, being his subordinate, cautioning economy, etc. I have always maintained that none of the World's Fair people ever appreciated the immense amount of earth we had to remove (nearly 400,000 yards), and the consequent necessary expense. No force—and I have seen many of the surveys at

work—ever worked harder, giving extra hours without extra pay, sat up more nights (in winter) guarding finds, or took more of a personal interest in the work. So there was nothing for me to do—as those above me never visited the group, even at a time when great discoveries were made—but to "take the bull by the horns," and direct operations as best I could alone.

Reference to the map (*) will give readers an idea of the position and appearance of the Effigy. It is of earth, but small stones and gravel cover the top, hence the statement by some that it was glacial in formation. The east end is 23 feet high; the central section is 19.3, and the western 16.6 feet respectively. Two depressions lying between the ends are 16 and 14 feet high. Figure XXI gives a side view of the mound and also the altitude at various points. I have stated (page 120, May Antiquarian) its base measurements.

The view presented to one standing on top gives the idea of a rude effigy—the human trunk. Its internal structure gave no evidence of such a character (unless we consider the boulder mosaics), for the mound was composed of a number of small tumuli added from time to time and finally covered by a mass of earth, giving its present outline. As the term is a convenient

*Opposite page 114, May Antiquarian.

one and will save future writers confusion between this and similar structures, it had best stand.

Dr. Wilson had left before the teams began work upon the Effigy. I was called away for a day. It was during my absence that the plows uncovered two boulder mosaics, one on each side of the first or east end cut. Dr. Cresson made drawings of them. Prof. Holmes saw them after the teams had torn out all but a portion of a

tail and one leg. Cresson's drawings are in Chicago and I have no copy here, but I reproduce one in Figure XXI—a fairly accurate copy of his sketches. I saw such portions as remained— leg, tail and neck— upon my return that evening. The boulder mosaics were very rude, about one hundred feet long, and were thought by Cresson to represent panthers. They were some three feet below the surface.

Our first cut, 200 feet long, 60 feet wide and 23 feet deep, cost over \$305,



Fig. XXII—Head-dress of Skeleton 248.

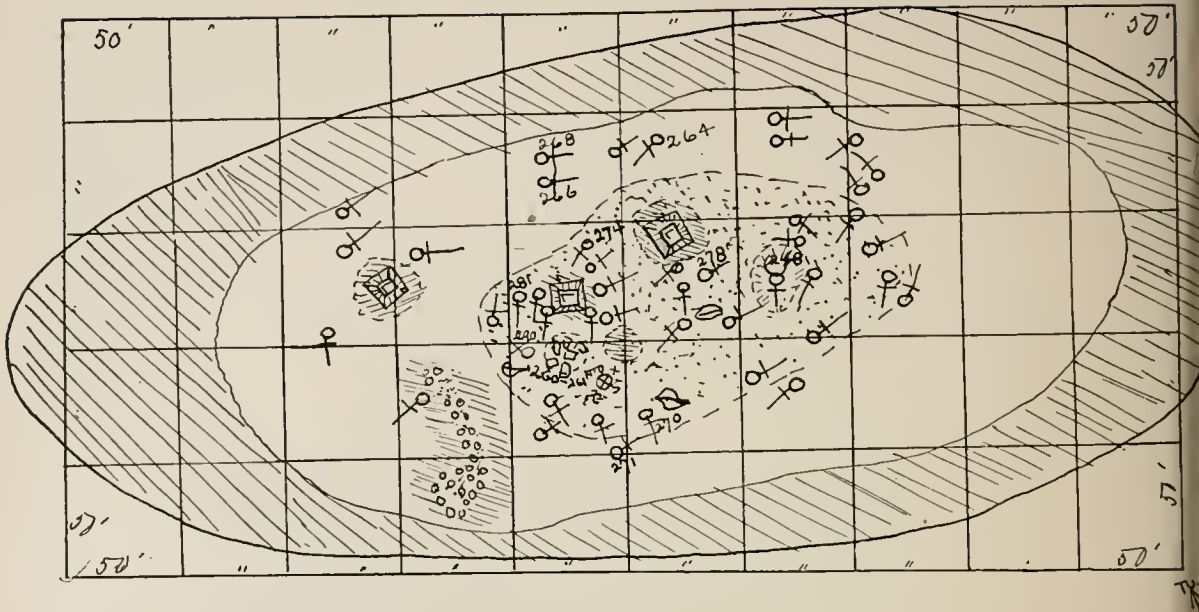


Fig. XXIII—Ground Plan of the Effigy. Each Square represents 50 feet. The Skeletons and Altars and Copper Deposits are exaggerated, else they could not be seen.

and yielded us a fragment of pottery, a few bones and some post holes. I confess that we lost heart and I looked forward to the receipt of a stiff letter from my Chief with apprehension, but decided to try a second cut a little narrower than the first, and started the teams upon it November 2nd.

Field Notes—"Nov. 12th, '91. The second cut in the Effigy mound has reached a point but five feet from the base line. Decaying skeletons noted in several places in the course of sinking experimental shafts led us to exercise great care. Abandoning the teams, we put in men with shovels and hand trowels and completed the examination by hand. In this section hundreds of small masses of various colored earths were observed. Short irregular layers of sand also extended in various directions. Skeletons 242, 3, 4 and 5 were uncovered, with a few shells, beads and copper ear ornaments."

The afternoon of Nov. 14th was stormy and cold. Dr. Cresson and I went to the team a little before five o'clock and hitched up. Our men were to join us in a few minutes and we would drive to our Chillicothe quarters.*

Peter Sammons, who had been with me four seasons in the field came running to the wagon much excited. "We have found the greatest man you ever saw," he cried. We ran over, hearing the men in the cut cheering as we approached. Sure enough, a little north of the center of the pit lay No. 248, called by the newspapers "King of the Mound Builders." Certainly they gave him a sensational name, but who can deny that the title may not be properly applied?

*Nov. 1st we had rented a house in town, it being too cold to camp longer. We left two tents at the mounds for shelter in case of storm. We drove out at daylight each day, making the trip in 40 or 45 minutes. (7 miles.)

It was getting dark, snow was flying and the thermometer ranged about twenty above zero. But what cared our old, hardened diggers for cold or snow or darkness? We all knew that we had found something of importance. It must not be disturbed that night, but covered, protected and watched over until morning. I started all hands to town but Sammons and ordered them to bring out supper, midnight lunch, breakfast, some cooking utensils and blankets. I never understood how they made the trip so quickly, but in a very short time the cook himself came with plenty of food and blankets. We three sat up all night, first having covered the "King" with hay, then earth, and lastly we stretched a tent fly over him.

The discovery was made by a man working with a hand trowel. He found several copper plates, the decayed skull and beads. Calling two of his companions, they speedily traced the antlers, etc., and then sent for us. Nothing had been disturbed; for our force was composed of careful and skillful workers, and in the morning I found the skeleton to be uninjured. It was headed north, of ordinary size and poorly preserved. A photograph of the remains does not clearly show the bones and but few of the relics. I therefore reproduce only the head-dress in Figure XXII.

Figure XXIII, ground plan of the Effigy, will show the position of 248, as well as other notable remains.

It is no exaggeration to state that the entire person of No. 248 glittered with mica, pearl, shell and copper. All that the ancients could give him were showered upon his remains. About the legs were numerous beads and fragments of copper plates. On the chest and under the back were several copper plates of large size. Perhaps a thousand beads, many of them of pearl, were strewn everywhere about him. Bear teeth, cut and sawed into fantastic shapes, were also found with the remains. There were copper spool-shaped ornaments and panther teeth among the ribs. Upon the copper there was a perfect imprint of cloth, and many of the beads had been sewed to the cloth. As near as I could judge, a cloth

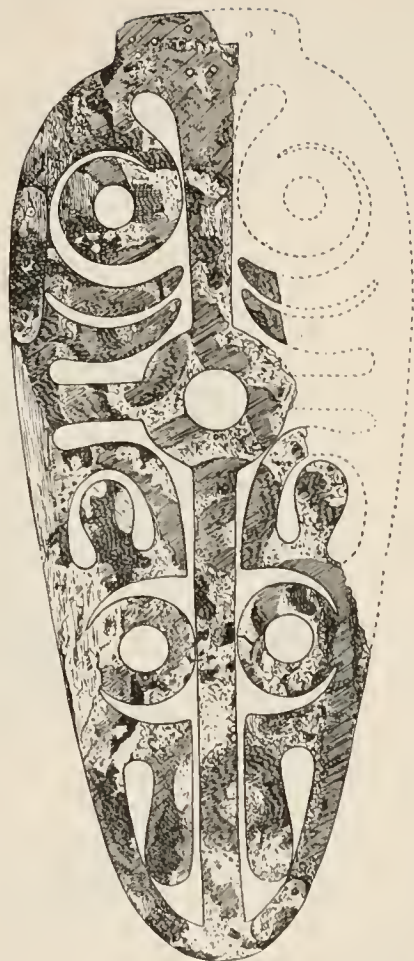


Fig. XXIV—Effigy Mound; design in thin copper. $\frac{1}{2}$ size.

or skirt extended to the knees of the skeleton. At its right shoulder was a large platform pipe and an agate spear head. Over the cranium had been placed a cap or helmet of copper. This was corroded and could only be taken out in fragments. From the crown of the head there extended wooden antlers, covered with thin rolls of sheet copper. They were fifteen by twenty inches, with four prongs on each side. The imitation was admirable. The head-dress is exceedingly remarkable and of great interest to students of American archaeology. These antlers were exceedingly frail. They could only be removed by taking out the entire mass of earth enclosing them. This



Fig. XXV—Effigy mound. Fish in thin copper; $\frac{1}{2}$ size.



Fig. XXVI—Effigy mound. Design in thin copper; 1-10 size.

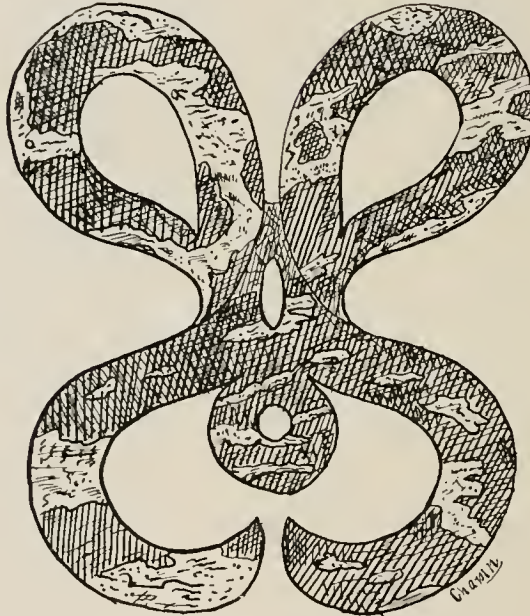


Fig. XXVII—Effigy mound. Design in thin copper; $\frac{1}{2}$ size.

we did, boxing around a mass thirty by twenty-six inches, just as we take out the altars.

In Cut No. 2 quite a number of skeletons were found, accompanied by several bone and shell ornaments.

It is a satisfaction to know that the head-dress went to Boston and from thence to Chicago safely. It is now, with all the Hopewell finds, in the Field Columbian Museum.

What does the burial of "the King" with head-dress, plates, etc., signify? We will consider it when we study, presently, the evidences of symbolism in copper.

While we dug out all the bottom of the second cut, the teams worked upon another

section. Rain delayed us somewhat, but towards the end of November, cut No. 3 was ready to be worked by hand. In it we found the only relic deposit of the entire structure lying above the base line. There were 120 pieces of sheet copper between three and four feet above the bottom, south of the center. They must have been twelve or fifteen feet below the surface.

Field Notes—"List of sheet copper found in Cut No. 3. A long mass of copper covered with wood on one side, squares and circles, patterns, etc., on the other. Eighteen copper rings and bracelets; (some 'double rings'). Two sets of anklets joined together by oxidation, three in one and two in the other. Five saucer-shaped

discs. Two swastika crosses, a saw pattern, a large grotesque arrow head and several unknown forms, stuck together. One wheel or circular pattern with straight and curved lines and bars running across it. Small discs, wheels, etc. One whole fish (evidently a sucker), one fragmentary fish. Two diamond shaped stencils, four spool-shaped ornaments, four comb-shaped objects, two spoon-shaped objects, one St. Andrew's cross, fifty-one various pieces resembling washers, etc. Ten small circles, and other fragments." (See figures.)

No bones were near this singular copper find. It occupied a space three by four feet, and had somewhat discolored the surrounding earth. No burnt earth, ashes, charcoal, etc., accompanied the sheets. They seem to have been intentionally thrown down (as an offering), when the mound was partially complete.

As in the case of all larger discoveries, the find was made just before quitting time, but was taken up by lantern light and removed to town. Although there appeared to be nothing else, in order that no mistake might occur, a man was left on guard all night. Additional digging in the morning revealed nothing.



Fig. XXVIII—Effigy mound; Bear symbol. $\frac{1}{2}$ size.

I reproduce thirteen of the sheet copper objects. The illustrations are from drawings made in the Field Columbian Museum. I am also indebted to Dr. Thomas Wilson for the loan of illustrations used in "The Swastika."

I shall defer descriptions until after presenting other copper deposits of the Effigy.

December 14th marks the next important find. During the first two weeks in December, in spite of intense cold and snow, we continued to work, taking out a number of skeletons. The list given below covers not only these, but brings up the work to January 4th or 5th, '92:

262—Intrusive burial, stone celt. (Near surface.)

264—Drill at the head, beads, two copper celts.

266—Eagle effigy.

267—Two ear ornaments and beads.

268—Copper plate and beads.

269—Ocean shell and copper plates.

270—Copper ax, bear teeth, mica, copper plate.

271—Mica, cut circular.

274—Two copper ear ornaments and a stone celt. Near this an ash pit in which we found a pipe and some cannel coal.

277—Copper plate.

278—Cannel coal ornament, carved human femur, two shell ornaments, two copper ear ornaments and bear teeth.

286—Shell ornaments and beads.

Near the center of the cut we uncovered skeletons (so much decayed that even fragments could not be removed), 260 and 261. I think that these were in the original center of the mound, and were the first interments made. The small mound erected over them evidently permitted water to collect about the remains. One of the dome-shaped structures, such as have been described, surrounded them, the earth was very loose and the structure appeared to have been larger than that built around any other skeleton. Both skeletons lay with their heads towards the west. The sheet copper had been found ten feet south of them. Right over the skeletons were sixty-six copper hatchets, ranging from four ounces to thirty-eight pounds in weight; twenty-three plates, several dozen broken plates, many thousand pearl and shell beads, perforated teeth and bear tusks, fragments of wood, fragments of meteoric iron, three or four meteoric iron celts, two eagle effigies (badly oxidized), fragments of carved bones, a stone celt, a broken shell and several copper figures of unknown form and use.

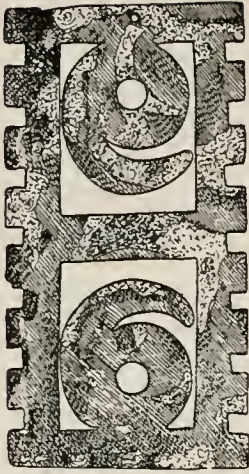


Fig. XXIX—Effigy mound. Design in thin copper; $\frac{1}{2}$ size.



Fig. XXX—Effigy mound. Cosmic Symbol in thin copper; $\frac{1}{2}$ size.

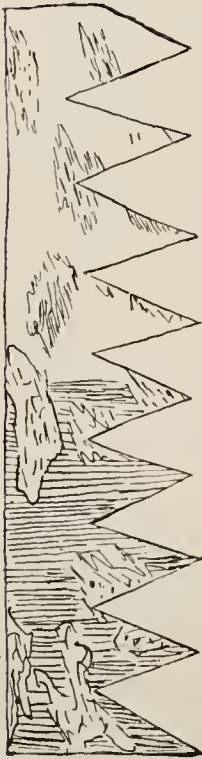


Fig. XXXI. Design in sheet copper.

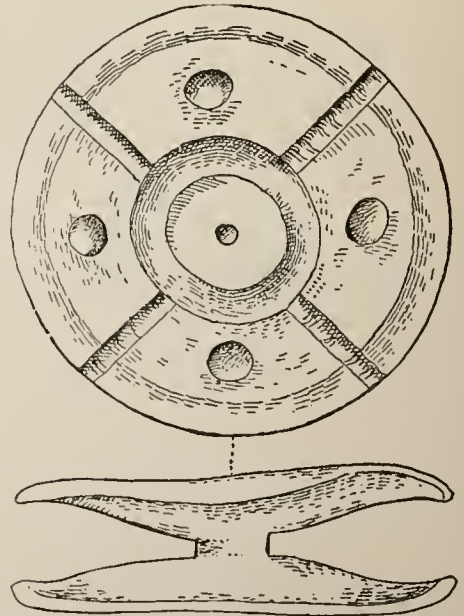


Fig. XXXIII—Effigy mound. Spool-ceremonial ornament of copper; full size.

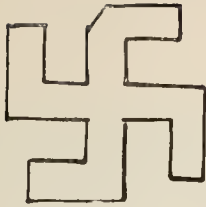


Fig. XXXIV—Swastika Cross in copper; $\frac{1}{4}$ size.



Fig. XXXV—Broad Copper Ring; $\frac{1}{3}$ size.



Fig. XXXVI—Circular Design in copper; 1-5 size.

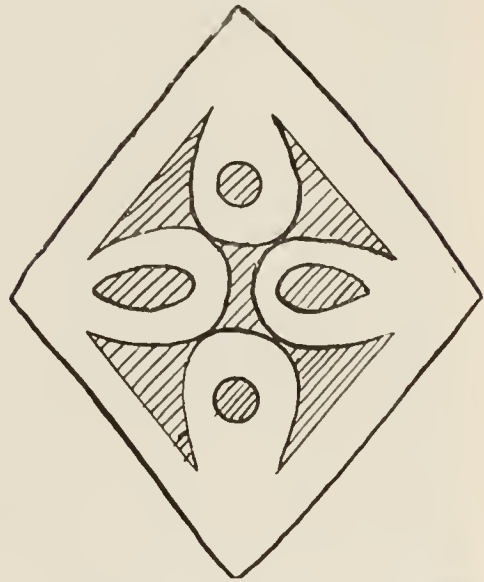


Fig. XXXVII—Four corners, or winds in sheet copper; $\frac{3}{4}$ size.

After having guarded it all night with nearly the entire force, I began work with a hand trowel immediately after breakfast and uncovered several of the specimens.*

Figures XXXII shows the copper in position after it had been carefully exposed. The photograph was taken about two o'clock in the afternoon. The soap boxes shown are half full of beads, stained earth and scales of copper. Mr. Lewis W. Gunckel, who is much interested in archaeology, having published a number of papers on American hieroglyphics, stands at the right. Peter, who found the "King" stands beyond me and leans upon a stick.

While uncovering plates and hatchets, I came upon an end of a very large piece of copper. It was four inches wide, an inch thick and appeared to be a rounded

nugget. Readers can imagine my feelings as the trowel exposed inch after inch and the specimen continued to thicken and broaden out. To say that the visitors* and men looked on in astonishment but mildly expresses the feelings of all concerned. Fifteen inches had been uncovered and yet an unknown portion of the great copper object, was buried in the ground. For fifteen minutes longer I worked and then my trowel rounded the edge of the largest worked (finished) copper object made by prehistoric man in the world. In spite of its size, the axe was very symmetrical. It weighed thirty-eight pounds and was twenty-two inches long. I do not remember the width of the blade exactly, but think it to have been six inches.

*It must be remembered that we only had an inkling of the nature of the find at dusk the previous evening.

*Word having reached Chillicothe, more than two hundred persons drove out and arranged themselves along the banks above.

(To be continued.)



Fig. XXXII—Cut No. 3 in Effigy. Copper axes and plates in foreground lying as found.

The teams were brought in and arranged along the wall of the cut on ground 2 feet higher than the deposit and 30 to 40 feet distant.

EDITORIAL.

Anthropologists will awake with eager interest the reports of the several expeditions sent to the far northwest to discover, if possible, traces of the first introduction of the Indian upon this continent from that direction. It is hoped—and some expect—that sufficient data will there be secured to finally solve that perplexing problem.

But, though undoubted evidence of early migrations of mankind from the Asiatic shores to ours may be discovered, will that fact fully account for the peopling of America by a race unknown in the eastern hemisphere? The Indian is a distinct type of man, and the unity of the aboriginal American race, the Eskimos excepted, is generally accepted as true. It is also true that the Indian type is nowhere found in Asia. It has been demonstrated that the islands of the southern Pacific ocean received their first inhabitants from the Malay archipelago; yet excluding an average conformity of crania and certain linguistic affinities, the natives of Polynesia and of Malay differed as widely from each other as either did from the native American. The Hawaiians first seen by Captain Cook were probably descendants of castaway Japanese or Chinese, but had outgrown every racial characteristic of their Asiatic progenitors.

These facts suggest the possible co-operative agency of natural forces in molding the sui generis American Indian. Our continent may have received some of its first people from northeastern Asia. Some from other parts of the old world may have been stranded on the Peruvian coast and there founded the Inca empire. If the report that ancient Chinese inscriptions have been found in Mexico is true, it follows that adventurous, or unfortunate celestialists were in that quarter at an early day. Accessions from some bearded eastern nation may have reached Yucatan and there planted the nucleus of Maya civilization. Other stragglers from the far northwest, tempest-tossed or drifted by ocean currents were, perhaps, involuntarily transplanted on our New England seaboard.

The effects of climate, food, and other environments peculiarly American, operating through centuries of time, we will suppose resulted here—as similar agencies

did in the Pacific islands—in transforming the heterogeneous stocks into one people and crystalizing their composite progeny in one monogeneous and distinct race of American Indians. This plausible hypothesis leads to curious speculations regarding our own destiny. The first American race is rapidly approaching extinction. Will the future American race, influenced by the same persisting physical causes, also assume the Indian type? As a nation we are yet embryonic; an agglomerated mass of unassimilated humanity drawn from all nationalities of the earth. In time the influx of population from abroad will cease, and then will commence—if it has not already commenced—the genesis of another distinctively American people. It will not be Indian. Because our preponderating basic element is Caucasian, and for the further reason that American isolation, an important factor in evolving the primitive Indian, is no longer possible. In the older and more stable districts of our country some of the ultimate products of transmutation agencies have been noticed. The blue eyes and flaxen hair of early Scandinavian colonists of Delaware; the sturdy Saxon frame and blonde features of the Germans who settled Pennsylvania; the broad-shouldered, ruddy chevaliers of old Virginia, and the squat, lymphatic Dutch of New Amsterdam have, by blending with each other and with other foreign stocks, disappeared in descendants of an indigenous type having dark hair and eyes, brunette complexion and tall, lanky forms.

From these and other formative indications the inference to be drawn is that the coming American will be dolicocephalous, or long-headed, with deep-set eyes, sharp features, smoky skin and spare, raw-boned body. Physically he will be the inferior of his pre-Columbian predecessors, the Indian, and morally not much his superior.

A correspondent in California has sent us a voluminous history of man's advent in America 35,000 years ago, and his subsequent migrations, wars, vicissitudes and progress from that time to the landing of Columbus. It purports to emanate from the spirit world through the mediumship of the great novelist, Charles Dickens. The

Antiquarian is not engaged in publishing fiction—excepting sometimes by mistake. And if it was, this particular production falls so far below Mr. Dickens' weakest efforts in that line when living that doubts of its authenticity would prompt us to reject it; and its great length precludes its publication as a literary curiosity.

We briefly noticed in our last issue that Prof. George P. Winship, of Harvard University, had supplied in the 14th annual report of the U. S. Bureau of Ethnology, a great want long felt by every student of early American history. His rendition of Coronado's expedition in 1540-42, including a general sketch of the causes instigating it; and of the condition of public affairs in Mexico at that time; of previous expeditions in the south and southwest and what they discovered; the full Spanish text of Castenedas' account of the great march and its literal translation; Coronado's official report to the crown, and Jaramillo's narrative, with several old maps and profuse illustrations, constituting a thoroughly exhaustive and masterly work that should find a prominent place in the library of every historical student.

For the first time the great isolated rock near the ancient pueblo of Acoma in New Mexico, known as the Mesa Encantador (enchanted hill), was successfully ascended, on July 20, by Prof. Libby and party. The Mesa rises from the general level of the plain to an altitude of 500 feet; its irregular sides of bare rock being almost perpendicular for half of its height. It is an outline of sedimentary formation, that has resisted the erosion of elements and forces that carved out its separation from the tablelands to the west, and is a noted landmark, held in superstitious veneration by the Indians, who have many traditions and legends of its occupancy by their ancestors and subsequently by mythical beings of supernatural powers.

Prof. Libby went prepared with an outfit of the coast life-saving service, and succeeded at the second trial, in firing a ball, with small cord attached, from a two-inch gun, over the rock. This cord was replaced by pulling over a larger, and still larger rope and then, with necessary blocks

and rigging and a boatswain's chair, the party were easily hauled up to the top by two-horse power. Says Prof. Libby:

"The necessary instruments, camera, etc., were lashed to the chair, and, after securing myself in the chair, I gave the word to start. The horses moved off and I passed on and up over the 700 feet of rope, taking two minutes and 40 seconds to reach the top. The chair was then lowered and Mr. Pierce followed me to my airy location.

"Then came a careful search during the remaining hours of daylight. Every portion of the fifteen or sixteen acres of broken surface was carefully examined. No traces of former inhabitants were found. Further, no altars or traces of prayer sticks were found. Not the slightest trace was found which would enable me to believe that a human foot had ever before passed over the top of this famous rock. A few agile lizards and several gray rats were the only occupants of this castle in the air. Some fine specimens of stunted pines, a few species of flowering plants and the ubiquitous sage brush lent a variety to the surface on the line of color of the bright sandstone. Some photographs were made. The views in all directions were very striking.

"The rock itself is an impressive fragment of the sedimentary deposit which at one time filled the whole of this Acoma basin, but looks as though it had been shoved up through the bottom of the valley."
J. F. S.

Our associate editor, Mr. Harlan I. Smith, writes from Kamloops, B. C., that he is finding "jade" axes, carved bone awls, etc. He says that the archaeology of the region is but slightly known and he anticipates discoveries of value. It would seem at first glance that the finding of "jade" implements on the Pacific coast so far north might prove that the jade in Central America came from Asia by way of the Behring Straits. This is simply a suggestion on our part, but at any rate, the finding of "jade" as it is called is interesting and unusual, and archaeologists can look forward with anticipation to the publication of Mr. Smith's report upon his return. He, however, is of the opinion that this is not the Asiatic jade, but only an impure variety.
C. L.

Some of the important anthropological collections including the recent additions in the American Museum of Natural History of New York have now been arranged, under the curatorship of Prof. F. W. Putnam.

The new hall of Anthropology, containing the division of Ethnology, is on the ground floor of the old building, under the charge of Dr. Franz Boas, and in it are the groups in plaster illustrating the life of the Indians of the north Pacific coast and Labrador; a model of a village on Vancouver Island; collections illustrating the customs of the Indians of the interior of British Columbia; collections from the Eskimo of Alaska; the Peary collection, illustrating the life of the Arctic Highlanders, the most northern people known in Greenland; the Lumlholtz collection from the Indian tribes of Northern Mexico; collections from the islands of the Western Pacific Ocean, embracing the region from New Guinea to Fiji.

On the gallery floor in the east wing are collections illustrating the life of the North American Indians and the Indians of Guatemala; collections from the natives of South America, Africa, Java and the Polynesian Islands. The North American collections are very incomplete and no time will be lost in securing complete collections where yet this opportunity remains in any of the various regions.

The division of Archaeology, on the upper floor of the main building, is under the charge of Mr. A. H. Saville. It includes the Bandelier collection from the region of Peru and Bolivia. It embraces rich textile fabrics preserved in that dry climate, gold and silver figures and an instructive series of pottery from various regions in Peru. Here also are the collections illustrating the life of the ancient cliff dwellers of Southern Colorado and Utah; collections from Northern, Central and Southern Mexico; carvings from the prehistoric city of Copan, Honduras; collections illustrating the life of the ancient mound builders of the Ohio Valley; an archaeological collection from Wayslick, Kentucky, arranged on an ethnological

basis; and a large collection from the islands of Southern California.

On the ground floor of main building, suspended on the wall of the vestibule is the Charnay collection of casts from prehistoric buildings in Mexico and Central America and of sculptures in the National Museum of Mexico.

On the mountain side north of Spence's Bridge in British Columbia is a boulder upon which the Thompson River Indians years ago made an interesting rock painting. The paint used was red ochre mixed with grease. The grease preserves the paint from the effects of the rain and weather. The region is one of almost desert dryness and the cactus and sage brush grow near the boulder. Mr. James Teit has given an explanation of these pictures in Vol. VIII, 1896, of the Bulletin of the American Museum of Natural History.

Prof Otis T. Mason, the Ethnologist of the United States National Museum, has been honored with L.L. D., by the Columbian University.

Apropos of Prof. Mason's paper on "Environments," it may be of interest to note that a series of collections is now on exhibition in the department of Ethnology, of the American Museum of Natural History; showing the dependence of a people on its environment and on the natural products of its country. In the northwest coast collection the users of the various products of the cedar tree illustrate this point. Cedar products are of extreme importance to the people of the northwest American coast.

H. I. S.

Volume VIII, of the Bulletin of the American Museum of Natural History, which was issued for the year 1896, is the first bulletin of the Museum containing papers on anthropological subjects.

In it was printed the paper of Commodore Andrew E. Douglass, entitled "A Tale of the Geographic Distribution of American Indian Relics," etc, to which reference was made in the June issue of this Journal. "The Temple of Tepeztlan, Mexico," by Marshall H. Saville, and "A Rock Painting of the Thompson River Indians, British Columbia," by James Teit, constitute the other anthropological papers of the volume.

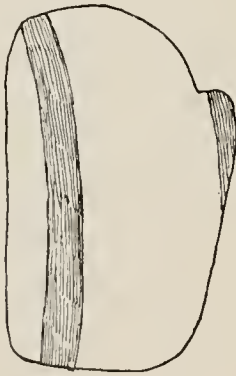
H. I. S.

CORRESPONDENCE.

Editor of The Antiquarian:

The Sandal Last, the subject of your article in the May number of The Antiquarian, is still to me the same mysterious thing it was when the one in your possession was found some years ago.

A great many have been found since that time, and the most careful student has been unable to find any use for them other than you mention in your article. Baron Norden-skiold had a fine specimen, which is now in the Academy of Science at Stockholm. The Hyde Collection in the American Museum of National History in New York contains several fine specimens. The state collection of Colorado, in the Capitol building at Denver, contains several, one of which is of very fine white stone.



Those in the collection at the University of Pennsylvania vary in size considerably, one of them being 16 inches long and 8 or 9 inches wide, if I remember correctly; and one just found here, made from a piece of pottery, is two inches long by one and a quarter wide, and five-sixteenths of an inch thick. It was found on the floor of one of the excavated rooms among broken pottery, but not in connection with anything to determine its use. Many of them have been found here (Chaco Canon, N. M.); also in Marsh Pass, Arizona; Grand Gulch and Allen Canon, Utah, and in many of the Cliff Houses of Montezuma county, Colorado, both in the Cliff Dwelling and Valley Ruins, and in no case have we found the sandal and this stone in connection in any way. And yet that is the only probable use we can find for them. Sandals have been found in great numbers partially completed, from fine threads of yucca to the whole leaf, and all seemed to be worked off-hand. Those made of fine thread and unfinished have been found with the loose ends tied in a bunch to keep from tangling until time could be had to complete them. The

coarser kinds merely had the ends sticking out at all angles. In all cases the toe was made first. I refer here only to the sandal of the Cliff and Mesa Dwellers, as the basket-maker made a round and a square-toed sandal with the same material, but without the offset at the little toe, specimens of which can be seen in great variety in the University of Pennsylvania collection and in the American Museum at New York City. We have in our Museum at the ranch hundreds of specimens of the sandals, and several of the sandal-shaped stones from Arizona and from no particular place about the various ruins in which they were found. We hope to establish beyond a doubt the use of these queer implements, and when it is done we shall be glad to make it known.

RICHARD WETHERILL.

Mancos, Colorado.

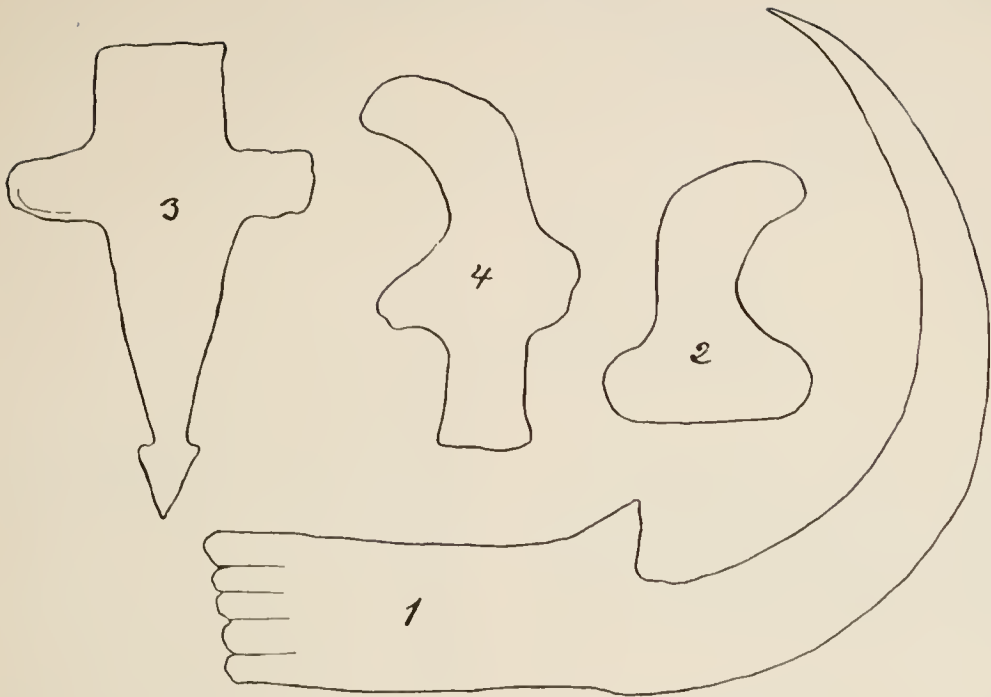
(The diminutive, so-called "Sandal Last" figured, and mentioned by Mr. Wetherill as having been made from a pottery fragment, we would suggest, was a toy fashioned by some fond mother for the amusement of her child. In the Museum of the Missouri Historical Society at St. Louis, is one of these strange objects from a Cliff House in the Mesa Verde, made of pottery ware or baked clay, with an inter-mixture of sand and lime. It has the same general form as those carved of stone, represented by the small one figured above, and is ten and a half inches in length, by five and a fourth inches in width at the broadest part, and nearly three-fourths of an inch thick. Its edges and one surface are plain and comparatively smooth; but the other surface is finely ornamented with intricate, scroll-like designs, evidently impressed with a die or stamp into the material when it was soft and plastic. This puzzling specimen presents a somewhat broken and battered appearance, as though from hard usage, but none of the polished smoothness of those made of stone, or of the round, indented, "discoidal stones" made of the same hard-baked pottery composition.—Editor.)

Editor of The Antiquarian:

There is a stone in possession of the Bureau of Ethnology similar to the one in possession of Mr. Hegler, which you illustrate on p. 192, July Antiquarian. I sent the stone to the Bureau, I think, in 1890, but have seen no mention nor description of it in any of the Smithsonian publications.

The stone mentioned was a little longer in the greater and a little smaller in the lesser diameter than the one you illustrate. The opening was through the longer diameter, was uniform in size, and the groove was parallel with opening; material and finish identical with the one you illustrate. I have not received from the Bureau any information in regard to its use, and do not care to venture an opinion.

I presume that Prof. Powell or Prof. Holmes might furnish a satisfactory answer to your inquiry. A. J. MARKS. Toledo, Ohio.



Editor of The Antiquarian:

In the July issue of *The Antiquarian* Mr. Hegler, of Washington, Ohio, sends a sketch of a polished slate specimen. I have three in my cabinet; one from Coshocton, one from Knox and one from Huron counties, Ohio. All have grooves parallel to the opening through the center.

W. C. MILLS.

Chicago, Ohio.

Editor of The Antiquarian:

I have figures of two carved stones like the one figured and described by A. Hegler in *July Antiquarian*. One was offered me in Toronto, in August, 1889, by Mr. Merryweather of Ohio, and was found in Batavia, in that state. It was of striped slate and one and half inches in diameter. General Thurston, of Nashville, bought it. Next day I found and figured another in the Canadian collection at Toronto, which came from "West Williams, Lot 20, Concession 18," and was larger, having a diameter of one and seven-eighths inches, not reckoning the groove. Otherwise both were spherical, but a little depressed at the perforation. The Ohio specimen had the largest hole.

There is little difference between the North and South shores of Lakes Erie and Ontario in the variety and abundance of articles of striped slate; the country north of Lake Erie being especially rich in bird and bar amulets. New York is also rich in ornamental articles; and Commodore Douglass' table of the geographical distribution of prehistoric Indian remains in our country is not altogether a test of this class of relics.

W. M. BEAUCHAMP.

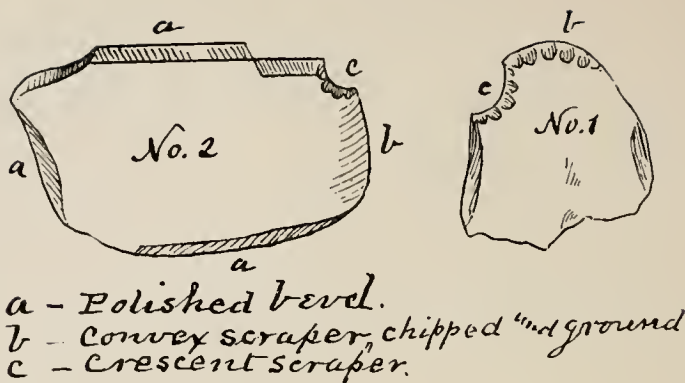
Baldwinsville, N. Y.

Editor of The Antiquarian:

I send you diagrams of some curious implements of the American stone age that are worthy of notice. Fig. 1 is carved from hard, black stone, and is finely polished. It is three-sixteenths of an inch in thickness and just the size of the drawing, and was found in a mound in Michigan. Having no sharp edge, if it was not designed as an ornament, it is difficult to assign its place in the list of prehistoric relics. Fig. 2 is common in our collections here; as is also Fig. 4. We class them with the scrapers—of the "crescent" order. Fig. 4 particularly, with handle attached, would make a very efficient tool with which to fashion a bow or arrow-shaft. Having myself been engaged in manufacturing in which wood working machinery and tools were used in great variety of forms I can appreciate the intelligent design of this primitive spoke-shave.

Fig. 3 represents a class of weapons that are very rare in this locality. I know of only about a dozen specimens, and have one of the same form in my collection that is made of copper, having the cross-bar but no stem. My theory in regard to the special use of this form of arrow point is that they were for shooting fish; the bar preventing the arrow, which had a line attached, from passing through, thereby greatly facilitating its subsequent recovery.

Nos. 2, 3, and 4, drawn in actual size, are about the fourth of an inch thick at the center, flaked, like ordinary arrow points, to an edge all around. The base of each is chipped to an edge suggesting their insertion in handles or shafts. The material of which they are made is dark colored chert, approaching in texture



the true flint. They were found, I think, in Tennessee.

These different forms of concave scrapers indicate that our stone age Indians employed only hard wood for their arrow and spear shafts. If, as some contend, this portion of their weapons was made of cane and reeds, for what purpose did they manufacture these scrapers?

THOMAS HARPER.

Bellevue, Pa.

CHICAGO CRESCENT AND COMBINATION TOOLS.

Editor of The Antiquarian:

In the July number of your spirited periodical I noticed your comments upon the report of Mrs. E. L. Golson, of East Saginaw, Michigan, and of Mr. Jos. Wilson, of Cass county, in our own state, making mention of the finding of flint implements resembling those found by the writer here in Chicago, in which you state it as your opinion that these objects were "emergency implements, made to serve a present purpose and then be thrown away."

I coincided in this belief until lately, when I was forced to change my view upon the matter by finding a perfect specimen of this class that convinced me the conclusion arrived at was incorrect. I enclose a drawing of the implement in question, No. 1, drawn in half of actual size, that clearly shows that this one, at least, was intended for something more than a mere "emergency" tool; and that it was a finely-chipped implement, worked out with care, and considered valuable by its maker.

The locality where it was found is near Highland Park, some twenty-three miles north of the center of the city, along the famous "Sheridan Road," at a point where the road, after crossing a deep chasm or ravine, is cut through a high embankment or hill farther to the north. I often ride along the Sheridan road on my wheel, carefully noting all strange objects in my progress, and discovered that both

sides of the deep cut mentioned were bristling with protruding flint fragments and broken and pitted stones, denoting an aboriginal workshop site of large extent. At first I held to the view that this breaking up of the flint was the result of natural causes—heat, frost, storms, etc.—and noticed that these fragments were quartzite and white flint, and not the chert occurring near the present lake beach that was commonly used by the ancient Indians of the Chicago region in manufacturing their tools and weapons. The flint implements found on the Illinois river and north, about the vicinity of Milwaukee, in Wisconsin, are invariably of this white flint, while those found in and around Chicago are generally of chert. I was at a loss to ascertain the source of the white flint until I discovered the refuse of these aboriginal workshops near Highland Park and Winnetka, and then the mystery was explained, for here this material is found in great abundance, and is undoubtedly of glacial origin; the chert of the lake beaches being also glacial deposits, but brought from some other direction, or by other ice waves. The beds of white flint fragments are quite deep—fully five feet—and bespeak great age, and I may add, great population. But how old? That the Chicago white flint arrow-points antedate those made of chert is almost an assured fact; and those made of white flint are the better implements.

Here is a mystery, and I would fain accept in its explanation the theory of "Lost Aboriginal Arts," as advanced by your learned contributor, Rev. W. M. Beauchamp, in the July number of The Antiquarian. The crescent scraper, No. 1, from the old white flint implement factory mentioned, is both a concave and convex implement, a combination tool, so to speak. Another fine example of this class, No. 2, also figured in half actual size, its flat, lower surface showing that one of its uses was that of a grinder, was found close to the lake beach at the foot of North Fifty-ninth street, or Foster avenue, Argyle Park, in this city. They are both neatly finished, and in places polished—it may be by long use.

I will pass them without further comment, leaving the editor of *The Antiquarian* to dwell on them in learned discourse.

CHAS. A. DILG.

Chicago, Ill.

(A closer inspection of the concave scrapers reveal the fact that they were skilfully designed for a specific purpose; and that they do bear every appearance of long-continued service.

Mr. Dilg states it as his belief that the white flint surface implements, crescent scrapers included, found about the Milwaukee area and along the Illinois river valley are the product of the ancient workshop he discovered on one of the old lake beaches near Highland Park; and that they are of higher antiquity than the chert implements of the later Indians and of much superior workmanship; all of which is very probable. It is also very probable the white flint was brought there long ago by the early Indians as raw material, from Flint Ridge in Ohio, or some other more or less remote flint outcrop, to be worked up at their leisure, or by their experts, into suitable tools and weapons. Similar refuse heaps of flint chips from old Indian workshops are frequently found throughout the Mississippi valley.—Editor.)

Editor of *The Antiquarian*:

In the *Antiquarian* for June, Dr. Thomas Wilson, page 149, figured (Nos. 19 and 20) an arrow-point triangular in section, which he classed as peculiar to Chiriqui, Panama.

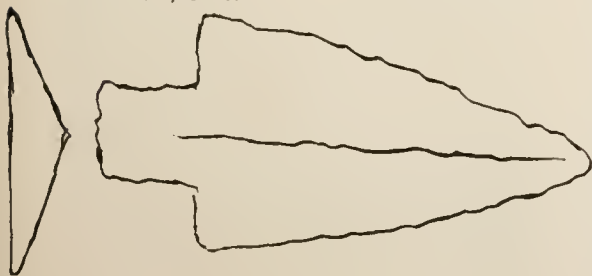
As an amateur collector I have a collection of about one thousand pieces, mostly gathered in this valley, one piece of which I enclose outline drawing, I myself found near Frankfort, Ohio; and from its peculiar shape have been led to call the attention of several advanced collectors to it, but none seem to have seen anything like it before.

Will some advanced archaeologist give, through the columns of *The Antiquarian*, his theory as to whether this point was made here or brought here from some other country? Have others of the same class been found in this state?

As a source of information, I subscribed for *The Antiquarian*. Will some one please satisfy my thirst for knowledge on this point?

A. B. COOVER.

Roxabel, Ohio.



(We hope this appeal to our readers will not be in vain.—Editor.)

FIELD NOTES.

In camp, Canon of the Frazier River, near Lytton, B. C.:

July 19, 1897.

To the Readers of *The Antiquarian*:

The first work of the archaeological section of the Jesup North Pacific Coast expedition was at Spence's Bridge, where one burial with all pertaining to it, was secured, as well as photographs of ancient Indian rock paintings and the ruins of the Kikulia House. The paintings are in red on boulders. The Kikulia House is perhaps the last to be found in all this region.

From Spence's Bridge the ethnological section pushed over the mountains towards the Bella Coola country with pack train, while the archaeological section began work at Kamloops. At Kamloops ancient burials on the hills, in the valley and of Christian Indians were examined. The bones, with all art objects, were secured, as well as photographs showing the locations and positions of hodies.

From Kamloop our section moved to Lytton, where we are now located and enjoying successful results for our work, having forwarded 148 photographic negatives and 55 boxes of specimens to the Museum of Natural History since June 2nd.

Our work at Kamloop and here was upon Indian reserves and was not allowed to progress until they were satisfied that we were working for educational purposes, when at once every facility was granted to us and we found the Indians not only careful and conscientious workmen, but also kind friends.

The climate here is delightful. Snow-capped mountains are to be seen in several directions. The sun is burning hot, but the air being clear and cool makes the day pleasant for work and the night cool for sleep. Every prospect is favorable for a successful result to our first year's expedition.

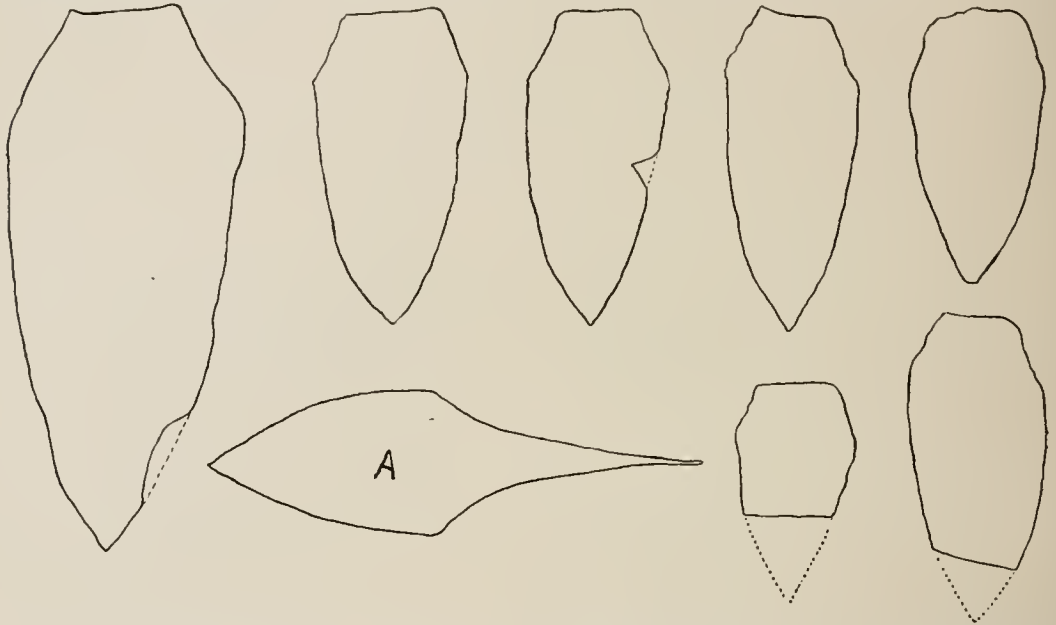
HARLAN I. SMITH.

A TOURIST FINED IN ARIZONA UNDER THE NEW LAW AGAINST VANDALISM.

Flagstaff, Arizona.—Vandalism in Arizona has grown to such an extent that the authorities have at last begun to realize that a vigorous policy of suppression is necessary in order to preserve the nobler monuments of a past civilization that were once so plentiful in this territory. In this county the first step in this direction was taken yesterday, when John O'Toole, an Eastern tourist, was arrested upon a warrant charging him with the wanton destruction of Aztec ruins, near Walnut Canyon. He has been camping out in the canyon for a week or more, and was caught in the act of demolishing some of the ancient cave dwellings there. District Attorney E. S. Clark issued the warrant, and it was served by Deputy Sheriff Fairchilds.

When examined before Justice Wilcox the prisoner was found to have in his possession a valuable collection of relics found in the cave dwellings which he had destroyed. The entire collection was confiscated by the court and will be turned over to the United States government. Under the law passed by the last legislature O'Toole might have been severely punished; but as this was the first case tried

under the new law and the prisoner's first offence, he received a severe reprimand and was discharged from custody. Future offenders will not be dealt with so lightly, for the authorities of this county, at least, are determined to do all they can to preserve the few fine ruins still remaining. Twenty years ago there were hundreds of these ruins, untouched by man, where now there are scarcely a score of them in a good state of preservation.



CACHE OF CHIPPED FLINTS IN OSWEGO,
TIOGA COUNTY, N. Y.

Editor of The Antiquarian:

A few days ago, while on a trip down the river after relics, I found a cache of seven chipped implements which had been plowed out a few days before, and fortunately for me, had not been noticed by the plowman.

The man said he had plowed the field about two inches deeper than it had ever been plowed before, and this must have been the cause of their coming to the surface. The field is about one and one-half miles below Owego, and borders on the Susquehanna river. It contains about six acres, and is sheltered on the north and west by hills; on the east, across the river, is another ridge of very high hills, which makes it an ideal place for a camp. The seven specimens were found together—the six smaller ones on top of the furrow and the larger one half buried. The plow had struck one of the smaller ones and the larger one and knocked a small piece out of each. They are all alike,

of black or gray flint, and of the same general shape and finish.

An excavation eight feet square by two feet deep failed to disclose any more, but exposed a fireplace with a pile of flakes by the side of it, which flakes were of the same material as the seven specimens, and were evidently accumulated in the process of making them. The field shows it was used a long time as a dwelling place; fragments of pottery, heaps of shells, broken pestles, flakes, net sinkers, hammerstones and arrows are plentiful; celts, spears and grooved pebbles are also quite numerous. But one perfect mortar has been found here.

It is not uncommon to get from twenty-five to fifty perfect arrow-points, one to three celts and as many spear points at a visit.

I have in my possession a very interesting chipped flint specimen, which was found on this field a number of years ago. It is seven inches long and is made of blue-gray flint, very nicely finished and is entirely unlike anything else ever found here (to my knowledge). I call it a dagger.

A. F. BARROTT.

Owego, N. Y.

THE ANTIQUARIAN.

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ARCH OF AUGUSTUS.

THE ARCH OF AUGUSTUS AT AOSTA.

The sketch presented of this splendid specimen of Roman art erected over nineteen centuries ago, and still standing in the humble village of Aosta, on the Turin Alps, was intended to accompany and illustrate the interesting paper written by Mr. D. Bushnell, Jr., that appeared in our September issue, descriptive of the antiquities still to be seen there, but arrived too late to be inserted in its proper place. We received with this delayed plate a note from Mr. Bushnell, in which he says: "The Arch of Augustus that rises above and a little to

the east of the village, is one of the most beautiful and best preserved of the Roman monuments in all Italy. The accompanying view is from a photograph taken by myself on the 25th of June, last. It is looking from the east toward the town. Under the arch passed the *via militaris*, which, during the historic era of Roman supremacy was the principal military road across the Alps to barbaric Gallia and Britannia, and over it Caesar led his mighty legions that conquered all of western Europe. The cross seen suspended from the top of the arch was placed there by order of the Pope in the fifteenth century."

THE HOPEWELL GROUP.

WARREN KING MOOREHEAD.

(Continued.)

Figure XXXVIII. shows the large copper axe (greatly reduced.) Possibly Fig. XXXIX. was the crown of a head-mask. It seems to indicate growing antlers, or those of a young buck. When found the horns or projections were downward and the raised surface uppermost. Fig. XL. is a close view of the copper deposit, bringing many of the larger pieces out clearly, and showing how they appeared when uncovered. Brushes (small whisk brooms), were carefully used in preparing the copper deposit for our photographer. None of the pieces were injured or moved from their original positions during this operation.

To the north was found the first altar, just east of skeleton 274, which was about 4 by 5 feet and 6 or 7 inches deep. It contained copper spool-shaped ornaments, shell and pearl beads, quartz crystals, sharks' teeth, panther and bear teeth, broken pipes, bits of carved bone, fragments of meteoric iron, broken ornaments, and tablets of stone, beautiful terra cotta or graphite slate rings, sherds of decorated pottery, copper balls, tusks, mica ornaments, flint knives, arrow heads, fragments of carbonized cloth and pieces of terra cotta effigies.* As in the case of all altar offerings, a fire had been kindled directly in the basin and all these things were heaped upon it. They were utterly ruined (save a few dozen) and no power on earth could save them. Those at the top were not so much affected as those at the bottom. The mass equalled about five bushels.

About a week before Christmas, the Field Notes record: "Skeleton No. 283 lay alongside of 281 in the edge of the cut. It was necessary to undermine the bank in order to get them out. With No. 281 were three large copper plates, each considerably over a foot in length. One lay below the hips, one below the shoulders, and the third beneath the head. A bird effigy and

a beaver effigy, both of bone, were found beside the head. They were well executed (see Figs. LII. and LIII). Copper balls and spool-shaped ornaments and copper beads were scattered about the remains. The heads were toward the east. A peculiar shaped shell cap covered the head of No. 281. It was very frail and broke into four pieces when removed.



FIG. XXXVIII- Large Copper Ax, 1-9 size.

"Continuing toward the west, a number of skeletons were found, accompanied by implements and ornaments.

"Cut 5 contained a number of skeletons. One of the most interesting things found in the cut was a rude spiral of boulders, several tracks or lines of ashes and some gutters or grooves in the hard floor of the mound. The trenches were burned until they assumed a reddish appearance. The ashes ran irregularly. The lines were three or four inches in diameter and from four to ten feet in length. They began and ended without any apparent object. The spiral of boulders might have represented a serpent. But one can scarcely believe that a people who were able to produce the exquisite sculpturings and etchings found in the altars should be unable to clearly execute a serpent mosaic. Had they desired to make a snake effigy they would have done so intelligently. The rude spiral or curved line of stones which had no apparent head or tail can hardly be considered serpentine.

*See Fig. XLV showing one of the sculptures from this altar.

"The grooves or hard burned gutters extended over the southern part of section five, but none of them extended to the edges of the cut, nor led to a skeleton or an ash pit."

Did these "gutters" have any significance? I think so. The hard burned floor of this mound, especially marked for 100 x 200 feet* showed every evidence of much use. I am persuaded that one or two wooden structures were over it; that ceremonies were enacted, and that the trenches or "gutters" had some connection with those ceremonies.

In January, 1892, we opened the mound to its western limit, Cut No. 7 being the last. In it No. 263 and No. 276 were found, but they lay toward its east side. In fact the largest altar (found in Cut No. 6), was quite near Cut No. 7. Both the east and west end containing very little, present an anomaly which we cannot understand. While we nearly completed our labors in January, yet it required some ten or more days of February to finish excavations, arrange for filling the enormous pit, pack specimens, etc.

January brought along much bad weather and we labored diligently to save finds in good condition. Skeletons 288, 289 and 290 had boulders nicely arched above their heads. Several skeletons in this part of the Effigy had stones laid upon or over the heads, but in no other instance were they arched. This arching was well done, 75 to 100 round, water-worn boulders as large as a goose egg, being employed. The stones were four or five inches from the skull, splendidly fitted together, presenting a smooth, even curve on the inside, but not quite so regular without. Naturally, this peculiar custom gives rise to conjectures as to its purpose, and I shall reserve comments upon it until the description of excavations is ended.

A small altar lying east of skeleton No. 281 contained nothing but ashes. I am inclined to believe its contents represent the cremation (perhaps a sacrifice) of human remains. There were bits of bone and the ashes appeared very like those resulting

from the burning of bodies. They were not wood ashes. Several cigar boxes full were preserved, labeled and sent away with the collection. I do not know whether they were examined.

The altar was more of a depression in an irregular mass of clay. I could not class it as a true, symmetrical altar such as we found to the east and west.

Near the west end we found the largest or western altar. It was 5 x 6 feet and 10 inches deep. I think the rim was 6 or 8 inches wide. From the level on either side (west to east), including the slope, the altar must have covered 12 or 15 feet diameter. Fig. LI presents it as it looked when uncovered. First came some charcoal and ashes. Then a layer of mica plates, 18 to 20 inches in diameter, the largest I ever saw. Not only had the cavity been entirely filled with singular and valuable specimens, but several bushels had been heaped about the edges of the rim, and for some distance down its slopes. Fires built above and below the contents had melted much of the copper. I took out great chunks of a conglomerate mass, composed of beautifully carved bone, pipes, effigies, etc., all of which were charred, cracked, or cemented together by half-melted copper. Bear tusks, tortoise shell pendants, bone effigies (some human), terra cotta and graphite slate rings, lance and spear points of quartz crystal, thousands upon thousands of pearl and shell beads. There were chalcedony knives in numbers. Our men (working with their fingers cautiously) cut their hands frequently. The keen little blades were hidden in the mass and it was impossible to tell when near one. Claws, tablets, cylindrical pieces of copper containing charred reeds, etc.

Several thousand fragments of large obsidian spears and knives were near the bottom. Notwithstanding the evident desire on the part of primitive man to destroy everything in his sacrifice to the dead, a number of interesting and unique specimens were saved entire, though most of them were broken.

Of the obsidian implements we secured many ten, twelve or fifteen inches in length. In Figure XLVII. I present one

*Surrounded by a dotted line in the ground plan; pg. 238, Sept. Antiquarian.

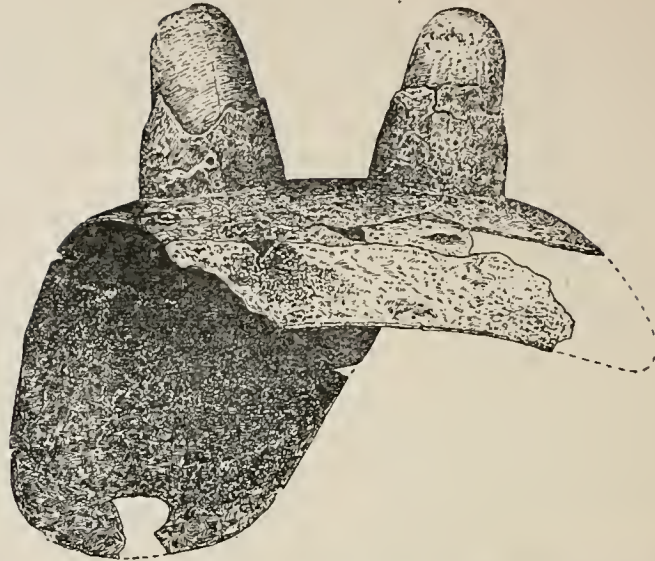


FIG. XXXIX—Growing Antlers (copper), $\frac{1}{2}$ size.



FIG. XL.

of the finest curved knives (notched) ever found in America. The illustration is full size. Some of the broken ones, such as Fig. XLVIII., must have been over 15 inches long. From the hundreds of fragments secured, several dozen additional implements have been restored and now a fairly representative series is on exhibition. Some idea of the terrific heat to which they were subjected can be obtained from Fig. L. It is warped out of graceful form. Other half-melted specimens were met with.

Among the effigies is a graphite slate pipe representing a spoon-bill duck, resting upon the back of a fish. It is by far the best sculpture from the Mississippi Valley mounds, but the illustration fails to do it justice. The feathers are carefully delineated, the bird true to life.

The fins are quite grotesque and unnatural. It is singular that the bird should be so true to life and the fish exaggerated. Beyond a doubt the effigy has some peculiar ceremonial significance. (See Fig. XLII.)

Estimates vary as to the number of beads in the altar. We filled ten soap boxes full of altar dust, ashes, objects and beads and shipped them to Cambridge. What little sorting I did gave me the average of 130 beads in a cigar box full of altar matter. There are the contents of 80 cigar boxes (half or "fifties" size) in a soap box, or 10,400 beads. Thus 104,000 beads in the ten soap boxes is probably an accurate estimate.

A review of the Effigy and its bearing upon mound building culture is now in order.

We have as indicative of commerce: obsidian, graphite slate, bad lands fossils and some silver. That, added to previously mentioned foreign substances gives us 14 materials, ranging in distance from 50 to 2100 miles from the Hopewell group.



FIG. XLIII—Portion of a Copper Antler from the large altar, $\frac{1}{2}$ size.

We find the culture to be of the highest—yet withal, a primitive and an ancient culture.

Late in December, 1891, I was called east for a few days. Taking the more remarkable sheet copper objects along, I stopped off a day in Washington. At a luncheon where the copper was exhibited, were Messrs. Powell, Mason, Holmes, Wilson, McGee, Gill and Hayden. Several of these gentlemen expressed themselves as follows: "That it was impossible for an aborigine using stone tools to make such intricate and delicate designs." *

Since then Dr. Geo. Dorsey and Mr. Jas. McGuire have both experimented and can make such designs with aboriginal tools. That very careful archaeologist, Mr. C. B. Moore in "As to Copper from Certain Sand Mounds of the St. John's River, Florida," treats of Ohio as well as Florida specimens.

"Comparative Purity of Copper.—Before proceeding to discuss the copper mounds, early post-columbian copper and native copper, it will be necessary for the reader to have a clear idea of the percentage of pure copper usually found in these

*They referred especially to Figs. XXIV, XXVII, XXIX, XXX.

commodities, that he may definitely draw his conclusions.

"Unfortunately, so far as the presentation of a striking case is concerned, the difference between the purest of smelted copper and the most impure is relatively small, its range not greatly exceeding two per cent., thus each tenth part of one per cent. is of marked importance.

"At the present time, with the most approved methods of smelting, a copper 99 per cent. pure is considered of inferior grade, good commercial copper averaging let us say, 99.5 per cent. pure.

"On the other hand, opinions of many experts, backed by results of analysis, lead us to conclude that in early post-columbian times, commercial copper of a much higher degree of purity than 99 per cent. was not produced in Europe. As we shall see, lead was at that period intentionally introduced during treatment, while arsenic and silver, loath to part company with copper, were not successfully treated by the processes of those days. In fact, it is asserted that in recent years old German copper coins have been profitably remelted for their silver, and yet it was in Germany that smelting processes were best understood during early times.

"It is evident then, that a copper purer than the average of that produced under modern methods of smelting cannot have been derived from Europe during the 16th or 17th centuries.

"The reader must bear in mind that analyses of copper from native metal, as given in works on metallurgy and the like are not results obtained from specimens of mass copper prior to melting, but analyses made from ingots of cast metal which may have lost proportions of certain elements during treatment, or received others through accidental or intentional introduction. We have been unable in any work

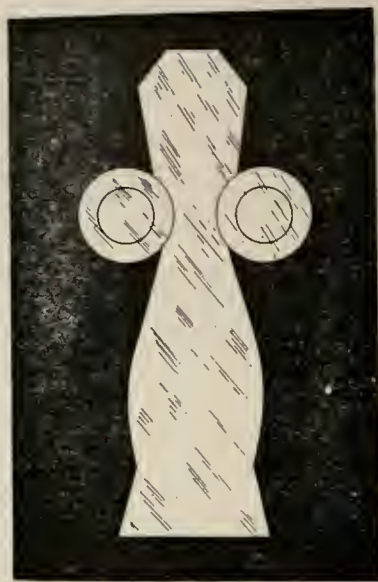


FIG. XLIV—Mica ornament, $\frac{1}{3}$ size.

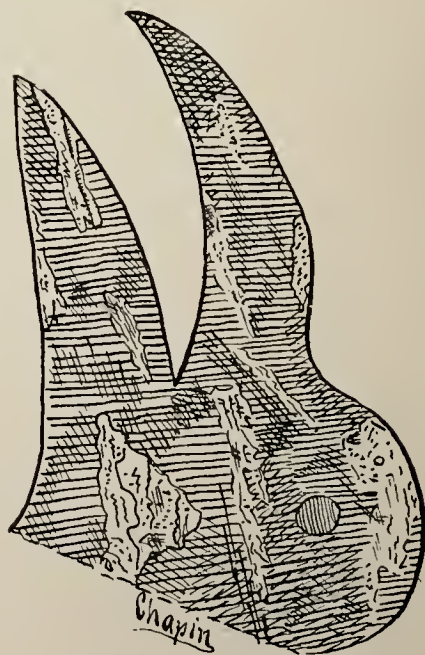


FIG. XLVI—Copper bird head, full size.

to find the result of a single analysis of native copper made prior to the ingot state, and have therefore submitted to various chemists a considerable number of authentic specimens from different sections. The percentage of pure copper in the native state previous to treatment is from 99.65 to 99.94.

"The Copper of the Mounds.—So great a period of time has elapsed since the deposit of copper in the mounds, that many of the sheets are carbonated and oxidized through, rendering absolute determination as to purity impossible. Where, however, a part of the metal remained, we have been able to arrive at definite results.

* * * *

"Incidentally, that mound copper from other localities, including the copper of the famous Etowah plates of Georgia and of the no less well known Hopewell mounds of Ohio, is, like the Florida copper, aboriginal, having nothing in common with the products of the impure European sulphides and imperfect smelting processes of the 15th, 16th and 17th centuries."

A fragment of a breastplate from the Effigy, hammered and cut, was given to Messrs. Ledoux & Co. for analysis. They report:

"The piece of ornament from mound in Ohio submitted to us for analysis contains:

- "Copper.....96.31 per cent.
- "Antimony.....0.0070 per cent.
- "Silver.....0.0450 per cent.
- "Nickel and cobalt.0.0060 per cent.

NOTE: The sample was carefully examined for arsenic, tin, lead, bismuth and zinc, none of which is present. This analysis was made by removing adhering oxides and carbonates as far as possible, but the sample contained sand adhering to it and penetrating it to such an extent that it was impossible to remove it all. This accounts for the low percentage of copper; the metal would have undoubtedly run over 99 per cent. if freed from mechanical impurities and oxygen.

* * * *

"D. Fragment of a copper plate (breast ornament) from a mound in Ohio:

- "Silver Present.
- "Lead None.

"E. Fragment of a copper ear ornament from a mound in Ohio:

- "Copper99.77 per cent.
- "Silver Present.
- "Lead None.



FIG. XLIII Bird-fish pipe, from large altar, full size.

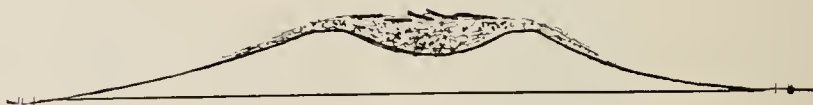
FIG. XLV- Effigy in stone, $\frac{2}{3}$ size.

FIG. LI- Large altar heaped with objects.

"F. Fragment of copper ear ornament from a mound in Ohio:

"Silver large quantity.

"Lead None.

"G. Ear ornament of copper covered with meteoric iron, from mound in Ohio:

"Gold None.

"Lead None.

"Silver Traces.

"Nickel... .. Considerable amount.

"Iron Large amount.

"Copper Large amount."

Mr. Moore effectually settles the "European origin" of the Hopewell copper.

I shall open the discussion of our Hopewell explorations by quoting from Professor Putnam:

"The marked development of conventionalism and symbolism in the art of the people who built the old earthworks in the Ohio valley and southward, indicates their connection with certain peoples of the southwest and of Mexico and Central America. It also furnishes one more point

of evidence that the Ohio earthwork builders were more closely allied with the early stock, of which the ancient Mexicans were a branch, than with the tribes of the eastern part of the continent. The art of the eastern tribes—with the exception of here and there of slight resemblance, which can easily be accounted for by survival from ancient contact—is of an entirely different character, with different motives and different symbols; whereas, this old art of Ohio is closely related to that of Mexico and Central America, and many of the symbols are identical. There is a certain resemblance in methods and technique, as also in the duplication of parts of a design to produce the double or so-called heraldic figures between these carvings from the Ohio mounds and those from the northwest coast of America."*

There is much food for thought in his proposition. As Professor F. H. Cushing

*(Symbolism in Ancient American Art. Prof. F. W. Putnam and Mr. C. C. Willoughby, A. A. S., August, 1895.)

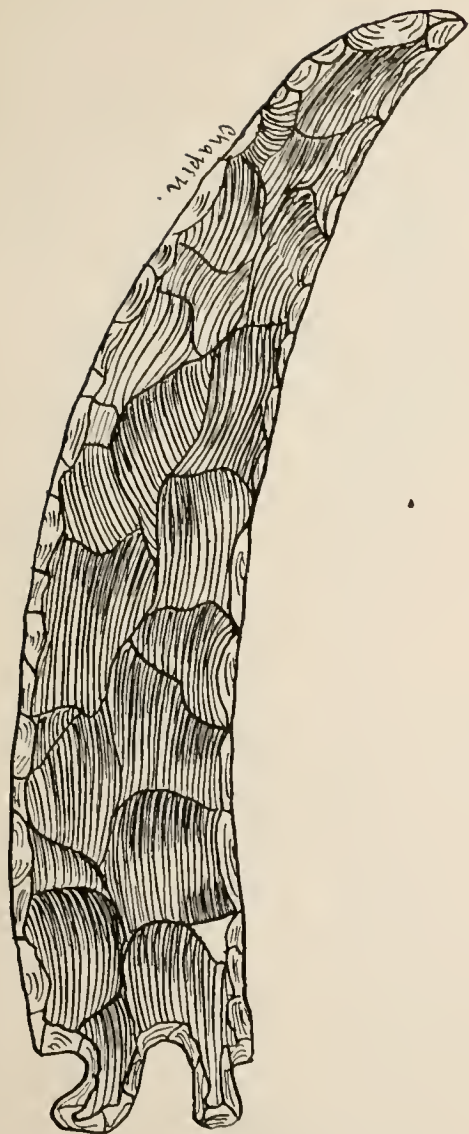


FIG. XLVII—Obsidian Knife, full size

remarked to me, the Hopewell material contains sufficient information, coupled with that already in hand, to settle nearly all the questions regarding pre-Columbian life in the Ohio valley. We must study it until we are able to give a correct interpretation. The difficulty lies with us; there can be nothing said against the material. I agree with Professor Cushing entirely. Of course it is only by comparison, by putting together facts obtained here or there, that we can arrive at even an imperfect understanding of the symbolism exhibited in the Hopewell material. I trust that the ensuing pages will call forth opinions from other and more competent workers. What I am to say is more in the line of suggestion. The first or opening report upon any given subject is liable to be inadequate and unsatisfactory. So, if in presenting the matter, a new field is opened for investigation and others entering into it are able to give us the true meaning of all these singular designs, etc., I shall feel that this report has not been written in vain.

Strikingly unique was the purpose of the Effigy, a place for ceremony, for sacrifice, for burial. Many of its relics were symbolic in the extreme and all considered, I am persuaded that each burial* had its peculiar significance. The general plan of the structure also indicates this.

I have referred to the "soft places" or "domes" in which traces of decayed supports are found, and have stated that small tepee-shaped structures surrounded the body. Readers will please remember that No. 248 ("The King") and several other skeletons were covered by one of the small mounds. The sheet copper deposit and the axes and plates over No. 261 were in another mound. The eastern altars, as also the western, had separate mounds over them, the latter covering four skeletons

*Several "intrusive interments" are not taken into account.

placed at irregular distances from its center. There were more small mounds, but it is not necessary to describe further. As I have said, these may have been built on the level dance or ceremonial floor from time to time. When the entire floor was covered, the people brought large quantities of earth and gravel, heaped it on top of the irregular contour of the small mounds and this formed the present Effigy.

It will be noticed that the head-dresses in copper (never found elsewhere in Ohio), were much used by the Hopewell Mound Builders. Figs. XXII. and XXXIX. are examples, and Figs. LX. to LXV. show the method of wearing the same, or rather, their part in a ceremonial or totemic mask. The human femur (Fig. LX.) was found alongside skeleton No. 278. It is a superb bit of carving on highly polished bone. The top is fluted.

Putnam* says of Fig. LXIV.:

" * * * shows the complicated design forming several heads and faces combined with the symbolic eye of the serpent god, which is often united with that of the sun god.

"This close union of the serpent and sun symbols is a characteristic feature of the worship of this great southern group of peoples. Fig. LXV. shows several parts of the design separated from the other portions. In this connection, the head dresses found with skeletons in the same mound are of special interest, as we here see the actual use of head-dresses of a similar character to those shown in the complicated design carved on the human bone."

Why these head ornaments, masks or heraldic figures should take the form of antlers (almost invariably) it is difficult to understand, unless we assume that the per-

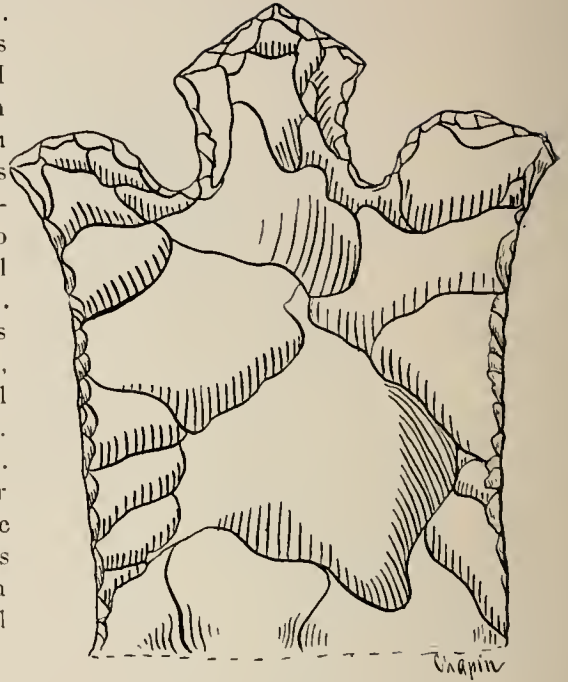


FIG. XLVIII—Obsidian Spear Head, $\frac{1}{2}$ size.

sons buried were of the deer clan, and, consequently, used that totem. We must also note that Fig. XLI., showing half an antler, is the only portion of "antler head-dress" found in an altar. All the altar debris was carefully sifted and examined, but no fragments of antlers, other than those put together in Fig. XLI., were found.

We have, then, skeletons 248, 261 and 262, which had such head-dresses, and skeleton 278 with such a design (in combination cosmic symbols) engraved upon human bones. All of them tell us much. In Fig. XXII. we have the full-grown buck. In Fig. XXXIX. the growing horns of the young buck. In the separate design on Fig. LXV., the crescent immediately over the forehead, typifies the timid creature. Professor F. H. Cushing in his explorations among the Florida Keys, has thrown much light upon the symbols and

*Symbolism in Ancient American Art. A. A. A. S. Springfield Meeting, 1895.

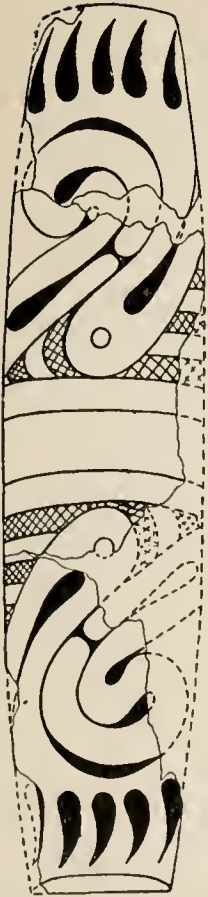


FIG. LXI—Design on Antler



FIG. LXI—Design of Fig. LX.



FIG. LX— $\frac{1}{3}$ size.
Tracing on human femur.



FIG. XLIX—Otter in bone, 2.5 size.



FIG. LXII—Portion of design of Fig. LX



FIG. LXIII—Portion of design of Fig. LX.

ceremonies. I may say that he has connected our northern Mound Builders with those of the south—yet in a period of great antiquity. His report, just out, published as a result of the Pepper-Hearst expedition, parallels some of the Hopewell symbolic figures, and I shall quote from him frequently.

"For it has been seen that in the case of the figures of timid creatures—game animals, like the figure-head of a deer, the carvings of the rabbit, and other creatures of the kind, all were characterized by a crescent-shaped device on their forehead. Thus, this conventional mark was not merely that of an individual representative of the species, but it was, so to say, a generic mark, representative of several species of the same general kind. This is further shown by the fact that another special kind of marking was equally characteristic of animals of prey—of the wild cat, the panther, the bear and their kind. In the carvings of each one of these fierce creatures, the outlines of the eyes were not only sharply pointed in front, but in each case terminated behind in three sharp triangular lines or marks pointing backwardly, and giving to the face of the animal figure a peculiarly crafty, yet sinister look."*

I am convinced that skeleton 248 possessed not only the antler head-dress, but that the amount of broken copper (some pieces of which were 3 x 4 inches and slightly curved), upon his face and neck represented his face mask. Around his lower jaw some of the copper yet remained in place. Thus it will be seen that the mask extended from the chin clear around

the skull to its base. The cloth skirt or cloak, the large copper plate,* beads and teeth must have been a part of the whole ceremonial costume. After reading Professor Cushing's report carefully and comparing our finds with his, I am firmly convinced that copper plates do not mean simply objects of personal adornment.

On this score Cushing well says:

"To a certain extent all personal adornment, so-called, of early peoples, are ceremonial or sacred, since the most rare and beautiful objects are like to be regarded by them as also the most effective charms or medicine potencies, if only because of their rarity, their substances and their colors."

A number of sheet copper deposit articles were stuck together by oxidization. On the reverse side was a strip of wood 20 or 21 inches long, quite thin and too much decayed for preservation. Streaks made by decomposed wood were observed about the axes and plates and also above or below many of the plates accompanying skeletons. I think that wood was much used both for tools, utensils and ornaments, but also for symbolic painting. Cushing found many painted boards in the muck and mire of the Florida Keys. He suggests their presence in northern mounds. But our climatic conditions have destroyed these priceless treasures. Such a tumulus as the Effigy must have contained scores of them; perhaps, also, of painted hides, etc. In this connection Cushing says: "How very little, after all, of the art of the stone age people * * * is really represented by the remains that are commonly found on the camp sites and in the burial places of such peoples."

We must be content, in the Ohio valley, with stone, bone, shell, clay, metal and mineral substances. That is all we can reasonably expect to ever exhume from the mounds.

(To be continued.)

*A Preliminary Report on the Exploration of Ancient Key-Dweller Remains on the Gulf Coast of Florida.—By Frank Hamilton Cushing.

*Narrative of Constaneda on the Coronado Expedition—1540-'42.) "Their lord wore a copper plate on his neck and prized it highly." Pg 509, Bureau of Ethnology Report '93-'94.

"DIGGERS" OR "ROOT DIGGERS."

Gen. John Bidwell, of Chico, Col., a pioneer of '41, in a recent letter to me, which I desire to have appear at length in *The Antiquarian* in another connection, deprecates the modern practice of indiscriminately dubbing the Indians of California as "Diggers" or "Root Diggers." The General called my attention once before to the impropriety of this disparaging classification, and evidently has strong convictions on the point. I have thus been prompted to make some examination of the subject, with such limited data as I have had conveniently at hand.

The name appears to be applied to certain tribes or bands of the widespread stock known as Sho-sho-nese. Lewis and Clarke (*Expedition*, Vol. I. Chap. XVI., Harper Ed.), enter into a rather minute description of these Indians, and mention the several kinds of roots upon which they at times subsisted, but do not refer to them as "diggers" or "root diggers." But when we come to Irving's *Astoria*, covering the Astor expedition to the Columbia in the second decade of the century, we find mention of "that forlorn caste called Shuckers or Diggers;" and in Captain Bonneville (1832-1835), the same author takes frequent occasion to speak of the "Diggers" or "Root Diggers," as he indifferently names them, and as he says "they are familiarly called." The habitat of those seen by Captain Bonneville, in the early thirties, was chiefly on the sage deserts along the Snake River. I quote from this work, Chap. XXIX.:

"These are a branch of the great Snake tribe called the Shoshones* or Root Diggers, from their subsisting, in a great measure, on the roots of the earth, though they likewise take fish in great quantities,

and hunt in a small way. They are in general very poor, destitute of most of the comforts of life, and extremely indolent, but a mild and inoffensive race.

"They differ in many respects from the other branch of the Snake tribe, the Shoshonies, who possess horses, and are more roving, and hunt the buffalo. * * * * They live without any further protection from the inclemency of the season than a sort of breakweather, about three feet high, composed of sage (or wormwood), and erected around them in the shape of a half moon. The farther Captain Bonneville advanced into the country of these Root Diggers, the more evidence he perceived of their rude and forlorn condition. "They are destitute," says he, 'of the necessary covering to protect them from the weather, and seemed to be in the most unsophisticated ignorance of any other propriety or advantage in the use of clothing. One old dame had absolutely nothing on her person but a thread around her neck, from which was pendant a solitary bead.'"

Dr. Edwin Bryant, in "What I Saw in California," Chap. IX., tells us of his seeing, on the south side of Great Salt Lake, in 1846, "three miserable Digger Indians, calling themselves Shoshones. They were naked, with the exception of a few filthy, ragged skins fastened about their loins. They brought with them a mixture composed of parched sunflower seed and grasshoppers, which they wished to exchange for some articles we possessed." The same writer met more of the "Shoshonese (Snakes)" at several points after striking Humboldt River, of whom he says:

"All the Indians of the valley claim to be Shoshonese. The bodies of two or three of them were partially covered with skins of hares sewed together. The others were entirely naked. Their skins are dark—nearly as dark as that of the negro. The distinguishing features between these Indians and the negro are in the nose, which is aquiline, the long hair, and the handsome Arabian-shaped feet. Their average stature is about five feet six or seven inches."

In this same book we read of a number of natives seen on the eastern border of the Sacramento valley, that "were nearly naked and resembled the Indians we had fre-

*"The Shoshoni, more commonly than any other of the Shoshonean tribes, were called Diggers and Shoshokos (walkers). None of them were agriculturists."—Johnson's *Universal Cyclopedia*, Vol. vii, p 508.

quently seen on the eastern side of the Sierra."

Capt. Howard Stansbury was at the head of a corps of United States topographical engineers that in 1849 and 1850 made a survey of the Great Salt Lake, his observations in that region covering an area of more than 5000 square miles. In his book, "An Expedition to the Great Salt Lake," p. 148, he gives some of his observations on the "Diggers:"

"The native tribes with whom we came in contact in the valley were the most degraded and the lowest in the scale of being of any I had ever seen. They consisted of 'Root Diggers,' a class of Indians which seemed to be composed of outcasts from the respective tribes, subsisting chiefly upon roots dug from the ground and seeds of various plants indigenous to the soil, which they grind into a kind of flour between two flat stones. Lizards and crickets also form a portion of their food. At certain seasons of the year they obtain from the tributaries of both the Salt Lake and Lake Utah, a considerable quantity of fish, which they take in wiers or traps, constructed of willow bushes. Those that we saw were branches from the Shoshones or Snakes and from the large and warlike Utahs, which inhabit a large tract of country to the southward. These are known among the traders by the designation of 'Snake Diggers' and 'Utes.' * * * I doubt (p. 174) if they ever placed a canoe upon its waters.* We saw no sign of the kind, even upon Lake Utah, although its waters abound with the finest fish."

Through the medium of such literature, the California emigrants of the early gold period became familiar with this designation for the filthy, horseless and generally destitute natives met with on the vast sage expanse of the Great Basin; and there being little if any difference in this respect between these Indians and those in California, the common people very naturally made no distinction in their classification. I know that in 1849, after we struck the Humboldt River, we heard scarcely any other name than "Root Diggers," finally

contracted into simply "Digger," for all the Indians with whom we came in contact on either side of the Sierra. And this popular prepossession was largely reflected by the book writers of this period that touched upon the subject. Lieut. J. W. Revere (Tour of Duty), T. T. Johnson (Sights in the Gold Region), Delano* (Life on the Plains, etc.), T. F. Farnham (Pick Travels in California and Oregon), George Gibbs' (Schoolcraft's Arch.), E. S. Capron (Cal.: Its History), S. Weston (Four Months in the Mines), and J. D. Borthwick (Three Years in California), may be cited as among those writers that apply the name "Digger"

**Delano ("Old Block"), formerly from this locality and well known on the Pacific coast from his voluminous writings, crossed the plains to California in 1849, taking the Lassen trail from the Humboldt Meadows. A day or two before reaching the Humboldt Valley, his train was visited by "a party of Digger Indians," and thenceforward he makes frequent disparaging references to the "Diggers," with whom the emigrants within his knowledge had repeated troubles. But when he comes to write of the Indians of the Sacramento Valley, to whom he devoted twenty-seven pages, he wholly abstains from the use of this reproachful characterization. On Feather River, twenty miles from Marysville, he lived several months within ten rods of a rancheria of Oleepas, on whom he bestows much praise: "I was completely in their power, and might have been killed or robbed at any moment; but while I was with them I am not aware that I lost the worth of a dollar, although I had \$5000 worth of goods with me at the time. Yet they would steal from passers-by. I sometimes had occasion to be gone all day from home, but leaving my house and goods in the care of a chief, or some of the old men, I invariably found everything safe on my return. My confidence was never abused. I never abused theirs." (p 310.) "A more jolly, laughter-loving careless, and good-natured people do not exist. * * * To each other they were uniformly kind, and during the whole of my residence among them, I never saw a quarrel or serious disagreement (p 297). Another village of the same tribe a half a mile above Delano was similarly peaceable and trustworthy under just treatment. Yet these people, according to the same authority, were filthy—often in the extreme, sometimes even picking and eating the vermin from each others' heads. The men were entirely naked, and were idle vagabonds, spending most of their time lounging. The women were reduced to unmitigated slavery, and were almost constantly occupied in gathering nuts, seeds, or wood; in cooking, pounding acorns, weaving blankets, or in some other way providing for the comfort of their lords.

*The same may be said of the Humboldt River, a stream some 300 miles in length.

to the Indians of California with more or less frequency and without apology.

Hittell (Hist. of Cal. Vol. I., Chap. XII.), after enumerating the principal tribal names of the Indians of Alta California, observes that:

"Notwithstanding these many names, there was little difference among the Indians from one end of the land to the other. * * * There were no governments, laws or customs aggregating them into large political organizations; there were no great nations or large tribes as on the Atlantic coast; there were no kings or even chiefs exercising sway beyond their own immediate neighborhoods; it was seldom indeed that there was anything like combinations or joint action of any kind. They lived in general in rancherias or villages of small extent. * * * Each rancheria had its own name; and it was rare that any number of them called themselves by the same name or acknowledged the same designation. * * * Can only be treated as other products of the country, to be regarded like the bears of the mountains and the coyotes and spermophiles of the plains as the outgrowth of the soil, moulded to what they were by the circumstances under which they lived, * * * entirely dependent upon what unassisted nature offered them, fattening and increasing in times of plenty and starving and diminishing in times of scarcity. * * * All were what the Americans, when they came to the country, termed 'Diggers.' They did not cultivate the soil, but lived upon what they could dig out or gather on top of the ground, and ate anything and everything within easy reach that would support life, not excepting carrion, clover, grasshoppers and grub-worms."

The abundance of acorns in most parts of California made this natural product to a wide extent the staff of life with the Indians of that country. The effect of that sort of food upon the gastric organs was much in evidence at their camps or villages, where in the dry season their excrement stood about in hardened cones for months, till obliterated by the sanatory winter rains.

The term has now found its way into most of the encyclopedias, as well as The Century Dictionary, the latter of which defines the word "Digger" as follows:

"A name given to a number of tribes of N. A. Indians, in California, Oregon, Idaho, Utah, Nevada and Arizona, which speaks widely different languages and compose a number of stocks. The name is used specifically to designate the Bannock, Piute, and other Shoshonean tribes known to use roots extensively for food, and who are hence 'diggers.'"

On the other hand, Bancroft, in his "Native Races," Vol. I., p. 326, deprecates the confusion that has arisen from the use of the word, and remarks that:

"The indefinite nickname 'Digger' which is applied indiscriminately to all the tribes of northern and middle California and to those of Nevada, Utah and the southern part of Oregon, * * * is seemingly opprobrious, and is certainly no more applicable to this people than to many others."

This "nickname," as employed by the early gold-seekers, certainly carried with it an "opprobrious" implication; and for this reason, if for no other, General Bidwell is fully warranted in the assertion that it is a "misnomer and should not be perpetuated."

D. R. LEEPER.

South Bend, Ind.

NOTES ON DELAWARE INDIAN
RIVER SITES.

Second Paper.

Immediately northwest of the Pennsylvania Palisades,* at the confluence of the Delaware River and Gallows Run, on an extensive deposit of post-glacial gravels, are the remnants of a large and important Indian village. The debris, although largely scattered by the plow, is yet sufficient over a large area to distinctly map the extent of the village and contour lines. The location of the village and camping ground along the grand and towering cliffs of triassic sandstones which here attain a perpendicular elevation above the blue waters of the Delaware River and Gallows Run of nearly five hundred feet, was truly an ideal one. Although some writers tell us that prehistoric man had no esthetic ideas, knowledge or enterprise, we beg to differ, believing as we do, and as the sequel will show, that the most ancient peoples of antiquity, at the earliest period in which we can study them, show that they had many arts and sciences, symbols, devices and ideas which not only portray keenness of ideas, but an intuitive principle of knowledge sufficiently elaborated in their art implements to convince even the most unwilling investigators that these ancients possessed appliances, arts and sciences that were already old even before the Adamic race appeared on this planet.

*The Pennsylvania Palisades, which constitute the highlands or high grounds here, form bold and towering cliffs, almost inaccessible under ordinary circumstances, extending along the Delaware river a distance of fully five miles. The position of the rocks being parallel with the south mountain range to the north form a grand, picturesque and romantic country. Embraced in it lies a lovely, fertile valley, a real paradise for the farmer and vegetable grower. The cliffs abound in some of the most beautiful and instructive freaks of nature imaginable, and to an imaginative mind and close observer they are an object lesson not soon forgotten. On these beetling cliffs clearly outlined may be seen the profile of the stolid citizen, the prominent citizen, the old maid and forlorn old bachelor casting furtive glances at each other, the beautiful maiden reclining on a mossy bed, the profile of an Indian chief, etc. Time and space will not permit us to go on. The whole, as viewed early in spring is a panorama of outlandish appearances beasts, profiles of men and women, etc., showing the evolutionary efforts of nature in all its phases.

One hundred and seventy years have come and gone since the larger portion of the prehistoric people who inhabited the town under consideration have retreated before the advancing tide of a superior race and civilization. The only traces the Indian has left of his former presence are a few local names and the numerous stone implements strewn around and accompanied by flint and argillite chips on the workshop sites.

Through his stone implements we learn how primitive man through countless ages slowly but surely evolved in his arts, habits and customs; also learn to know the Indian as he was before coming in contact with his conquerors, the white men. The finely chipped spear-points and arrow-heads tell us how he procured the necessities of life—his mode of defense and offense. The stone mortars, pestles and pottery speak of his domestic tastes and life. The pipes of stone and clay remind us of habits unfortunately too prevalent among our own race. The finely carved and polished ornaments show his love of display and tell us that nature has implanted the instinct of the beautiful alike into the mind of the untutored savage as well as in the cultivated race where it occupies a prominent part of human nature.

The Delawares and the Shawnees being the latest to occupy the locality under discussion, it is reasonable to suppose that the more polished and fine relics discovered here are the work of these tribes. The rude and roughly chipped implements may be relegated to earlier occupants of these beautifully located prehistoric dwelling places. The locality presented superior advantages to a savage or barbarous mode of life the same as it does to the cultured and superior race who now occupy the site.

The Delawares, a strong and powerful tribe, occupied a large and fertile portion of country* on the eastern banks of the Delaware River in New Jersey.

*In the fall of 1877 the writer, accompanied by the genial and cultured archaeologist, Professor A. F. Berlin, of Allentown, Pa., visited the locality and obtained a large number of fine specimens of Delaware Indian art; but as we intend to give the reader of *The Antiquarian* a full description of this important Indian town and battle ground, its unique relics, traditions, etc., in a future paper, we will not occupy further space at this time.

The Shawnees* were of southern origin, a restless, wandering people, and had a marked genius for creating disturbances among neighboring tribes.

Without digressing further, we will at once turn to a description of the more important implements discovered on this and outlying camp sites and observation points connected with the one under discussion.

At this camp site some twenty or more years ago we found numerous slabs with a smoothly polished and apparently greasy surface. Later on we found small wedge-shaped implements, which also appeared to have a more or less oily surface. As the Indians killed animals they evidently dressed the skins by laying them on the polished side of the aforesaid slabs of stone and rubbed them down with the smaller wedge-shaped stones in the same manner, and for the purpose as do the carriers of to-day.

Among the numerous and unique arrow and spear-points, celts, axes, pestles, pottery, effigy stones, amulets, etc., we have only room for a few, as a general description of these would be tedious reading for the practical archaeologists and experts who, no doubt, constitute the larger portion of those who patronize The Antiquarian.

In this region all remains are not Delaware nor are they confined to the Shawnees. The various styles of implements, household utensils, ornaments, ceremonial objects, etc., denote the presence of offshoots of the same or foreign tribes.

Some of the pottery is decorated, while other specimens are entirely plain. Small fragments of steatite pottery have been exhumed, emblems of slate are discovered,

*The Shawnee Indians came under the protection of the Delaware tribes in 1698, and were utilized by the Delawares to guard the Jasper quarries, iron mines, and supposed lead and silver mines. They continued to reside here until 1730 and increased wonderfully in number. The Delawares tiring of watching them, and helping them out of numerous difficulties and disturbances in which they were constantly engaged, ordered them to leave the country at once or abide the consequences. The Shawnees, knowing the strength and temper of their guardians, obeyed the mandate with such alacrity that they left, in their haste, most of their household implements, pottery, axes, mortars, canoes, dug-outs, etc., which will be fully brought out in future articles.

also of trap, most of the heart-shaped amulets are of trappean rock. The pipes are of various shapes, manufactured out of clay or stone; but are rarely found at this late day. The axes are as a rule grooved on four sides—a few grooved on three sides are also found in the vicinity; net sinkers (?) are pecked all round; pestles are generally pecked, and from six to twenty inches in length and one and one-half to three inches in diameter. The mortars are one to six inches in diameter, and from one to three inches in depth. The hoes are of Potsdam sandstone and syenitic rock. A few are perforated for a handle; but most are notched, while some are without notches or perforations. They are finely finished throughout. Some of the stone wedges weigh from four to five pounds. Disc stones have been found having a diameter of seven inches, chipped out of post-glacial boulders. Some few tubes of steatite, perforated, have been found here.

Fully one-half of the relics are of argillite greatly weathered by age, showing an occupancy of this site during many centuries before the Shawnees in 1698 were compelled by the Delawares to occupy the site. The Delawares in placing the Shawnees on this site showed great strategic diplomacy. The main body of Delawares dwelt on the opposite side of the Delaware river, and so located that the campfires of the Shawnees were always visible, and any disturbances or warlike preparations by the bloodthirsty savages would at once be discovered and the alert Delaware warriors dispatched to the scene to quiet their unruly proteges.

The larger portion of the relics above alluded to or described, have found a home in the museum of the University of Pennsylvania, at Philadelphia, and in the museum connected with the Bucks County Historical Society, at Doylestown, Pennsylvania. However, Benj. W. Purcell, owner of a large portion of this village site, has recently collected some new and interesting specimens of Indian art.

In our next we will give a concise description of the outlying campsites and observation points connected with the one under discussion.

CHARLES LAUBACH.
Reigelsville, Bucks Co., Pa.

THE DIGGER INDIANS OF CALIFORNIA.

The least interesting of all the Indians I have had any acquaintance with are the Digger Indians of California. To describe them in the fewest words, we may call them filthy, vile and servile. They are not brave and warlike. Yet they are treacherous and dangerous under certain conditions. There are different degrees of degradation in the different tribes inhabiting different parts of the state.

In 1849 I found them entirely nude except a fringed breech-clout made of skins, worn by the squaws. All males and all children were entirely nude. They knew almost nothing of any kind of mechanism. Their habitations were generally constructed of the bark of trees built up in a conical shape; and when they had a fire it was on the ground about the center of the structure. An advanced rancheria would be of dry hides instead of bark. Some would make a slight excavation, and roof it over with bark or skins, leaving an opening to crawl in and out at. Usually from 20 to 25 bucks, squaws and children would inhabit one of these abodes. I never saw them handling any kind of tools; but they made bows and arrows, their implements of war, and used also for killing game in some way. They also made baskets of willow twigs that would hold water. I don't think they made or used flint or stone arrow point. Their arrows were sharpened at the point, and when used against an enemy the point was dipped in poisonous substances they made themselves. They seldom aspired to killing of larger game than a ground squirrel or jack rabbit. Their food consisted of this kind of small game and acorns, clover, grass seeds, crickets and grasshoppers, mainly. A very large black cricket abounds in certain localities, and their method of obtaining them is as follows: Make an excavation in the center of a prescribed area; make a circle of fire with the dry grass all around the excavation, some distance from it. As the fire burns the dry grass and leaves it approaches the excavation nearer and nearer until the crickets are driven into the hole; the Indians quickly fill the hole with dry leaves

and grass and apply the torch. After the fuel is consumed the crickets are taken out ready for storing for winter use, and the squaws fill up their baskets and trudge off to their camps.

They pound their bread food in mortars hollowed out in a large flat rock. The pestle used is a stone also. They mix the compound into a dough and bake it in the ashes. Anything they boil is put into a water-tight basket made of willows, into which heated stones are thrown until the mess is cooked. Their bread is usually a compound that will be understood from the following anecdote: An ox teamster being delayed between two widely separated stations was at the point of starvation when a friendly Indian came along munching a roll of bread he carried under his arm. The teamster begged a piece of it, and after eating it asked what it was made of. The Indian replied, "Some acorn, some cricket, some grasshopper, some lice." They are always supplied with an abundance of vermin which they eat and relish.

In physique they are below the average size of the ordinary American Indian. In features they also differ from the regular type of "Lo." Their lips are thicker, their nose shorter and flatter, and their tongue is thick and incapable of clear articulation. A word beginning with f or r, or that has the letter v in it, they cannot pronounce. They give such words very nearly the same pronunciation given by the Chinese. They are all pigeon-toed without exception. Their ankle joins the foot very near its longitudinal center; and the track of one of these Indian's bare feet in the dust can scarcely be distinguished from that of a bear. Their only marked features of the genuine American Indian are their long, straight black hair and copper color. They incinerate their dead. They make a pile of wood and brush, place the body on it, and keep up the fire until it is consumed to ashes. If it is a buck the oil that issues from his body, while burning, is caught and afterwards mixed with the ashes and black pitch to a stiff paste and then it is daubed over the head and face of his squaw. This is her mourning garb which she wears until by natural attrition it disappears. Their mourning is not becoming nor attractive;

but she must wear it two or three years to hold her position in the society of her deceased husband's friends. For two or three days after incineration commences the squaws keep up a continual doleful howl around the pyre.

These Indians have no horses and but few dogs, the latter bearing a strong resemblance to the coyote of that country. This description does not fit in all respects the different tribes classed as Root Diggers; but is a fair epitomized description of that portion of aboriginals that inhabit, or did inhabit, the lower mountain ranges or foot hills of the central part of the state of California. They all spoke a corrupted Spanish language or dialect, and were quick to pick up enough English to converse in that language. All of them are gamblers. Their native mode of gambling is with sticks, shuffling them from hand to hand behind the back, the adversary then guessing in which hand they are in. After the miners came, they would hang around the cabins and pick up and put on castoff clothing. Sometimes an Indian would be seen dressed in two or three hats and half a dozen shirts and nothing else. In their gambling with each other they would bet their clothes after they got to wearing them; and it was not unusual to see one in the forenoon with several shirts, pants and hats on proudly strutting around, and in the afternoon see him dressed in his complexion only. They quickly learned to play at the Mexican game of monte and would "bar the door, whirl the post, play trucaleta, parazo and totus magnus" equal to a Mexican professional.

I don't think they had ever been taught anything about Christianity, though farther south some Catholic priests labored with them. Farther north are other tribes that belong to the Root Diggers; but not so low in the scale of humanity as those

described. In Idaho and Washington there are tracts of land of considerable extent where cammas grows spontaneously and bountifully, and is used extensively by the Indians as an article of food. The top of the plant resembles a flag and bears a variegated blossom. The root is the food constituent and bears a faint resemblance to a small sweet potato and tastes slightly like it. The Indians of Oregon and Washington raised a good many horses and cattle, and a few of them possessed considerable wealth; and civilization has been inculcated there from remote periods by Catholic priests.

In 1878 I saw a little band of Nez Perces passing through Boise City, Idaho, going east, with a lot of horses for a month's racing with the Bannocks. A young Indian dressed in a cast-off suit of military clothes, came to the house of a friend of mine, where I happened to be visiting, and wanted my friend to inform him where he could see Jesus Christ. When informed that the Lord was not much in evidence just then in Boise City, he was greatly dejected, saying the priest at the Dalls had told him he could see the Savior in this place.

"Lo, the poor Indian whose untutored mind
Sees God in the clouds and hears him in the
wind"

has but a vague and confused idea of Christian theology.

I saw in Idaho near a long abandoned Indian camp, a bushel or more of stone or flint arrow heads, blocked out but not completely finished. Most of the Indians at the time I lived in Idaho had discarded the bow and arrows and carried guns. The California Root Digger is the only Indian I ever saw that did not make moccasins and leggings. The only ornaments I ever saw them wear was a polished bone pin passed through the grisly center division of the nose, which was perforated for the purpose, and occasionally a few beads.

FRANCIS C. PORTER.

Mt. Pleasant, Iowa.

CUPPED OR PITTED STONES.

Among the most interesting—because the most mysterious—of the implements of the stone age, are the cupped or pitted stones found in all parts of the world, wherever ancient or primitive man has been traced.

Little attention or study has been given.—at least to the writer's knowledge—to these peculiar implements, for implements they surely are; and yet they undoubtedly played a prominent part in the domestic economy of aboriginal life.

Found, as I have said, all over the world, their use seems to have been universal; and an implement of universal use surely must have been a tool of utility as well as of necessity.

To what use could they have been put? In a field like this speculation runs rampant. It is easy to conjecture, but it is harder to define. Scientists truly are "many men of many minds," and one is easily tempted to be dogmatic in an unknown realm; but no man holds a first mortgage on knowledge; for the hypothesis of to-day is succeeded by the demonstrated truths of to-morrow, which in turn gives place to a "higher criticism." I do not therefore intend in this brief article, to put forth any ideas or theories of my own; but only to state such facts as in my limited field have come before me, in order to draw the attention of those interested in studying the problems of the life and struggles of our predecessors in this land.

I have in my collection some fifty-five specimens of these stones, gathered in my search of the fields for relics. I have found them wherever I have found the Indians, and I have found them where I have found no trace of the red man; that is, where I have found no trace of his habitation. The location of finding, in my case, counts for

nothing. I found one in a funereal feast, and one in a grave, doing duty as a pillow; all the rest were surface finds.

Fifty of the fifty-five are brown sandstone pebbles; the remaining five are quartzite sandstone. It seems significant that they are all sandstones, although somewhat of the significance may be lost in the fact that the prevailing pebbles of this region (Plainfield, N. J.), are the brown stone pebbles of the drift.

The stones are alike in some things and unlike in others. The pits of some are deep and rough, of others shallow and smooth. The number of pits vary with the size and shape of the stones, some having only one pit on a side and others two or three.

The stones are of all shapes and sizes; some are smooth and round or oblong, while others are but irregular bits of sandstone, having no symmetry of form.

The pits bear no particular relation to each other, being placed in every available flat surface, but always as near the center as possible; some of the pits overlap or merge into each other. The stones of my collection range in size and form from one and three-quarter inches to five and one-half inches; the pits from one-half an inch deep to one and one-quarter in diameter.

Forty-seven of the stones show absolutely no signs of battering whatever; of the other eight, only two show distinct marks of use.

One particularly hard quartzite with two clearly marked smooth depressions, shows not the slightest evidence of battering, being as smooth as the water wash left it.

I have thus enumerated some of the similarities and differences of these interesting relics, as shown in my limited collection and experience.

What they were used for, I cannot say, but what they were not used for, may to a certain extent be indicated by a summary of the foregoing facts.

Where the positive is silent, the negative may often speak.

I. They were not used as hammer stones, as they show no battered peripheries or edges, and the majority being of soft brown sandstone would be useless as such.

II. They were not used as missiles or throwing stones, for the same objections hold good; i. e., no battering and being of soft material. Also the pits bearing no relation to each other, and being in the most inaccessible places, were not adapted to an easy grasp of the fingers for throwing purposes; further, many of the pits are too deep, and others too small and deep, for such purposes.

III. They were not used as anvils or resting stones in the manufacture of arrows and similar implements, as many of the pits are too deep and others too smooth, showing no signs of having come in contact with any hard substance.

IV. They were not used as nut crackers, as some of the pits are deeper and narrower than they ought to be for that purpose; the smooth ones, also, showing no battering, which they certainly could not escape, if used for the purpose mentioned. Furthermore, the merging of the pits or depressions would be unnecessary in such case, and a useless labor,—no matter how slight—under this presumption; and man in general, much less the savage or Indian, is not prone to work for fun only.

Having thus summarized what seems to me the negative or non-uses of these curious implements, I leave the subject for others to take up in the hope that some one may be interested enough to compare notes with me.

I will simply ask, could they have been used as fire producers? Fire was a universal need of primitive man.

GEORGE H. FOUNTAIN.

Plainfield, N. J.

(In his process of deduction by exclusion Mr. Fountain may exclude some of the uses to which the pitted stones were applied. Otherwise stated, the objects in question may have served for several different purposes. Some of the smaller ones, with deep, narrow indentations were perhaps pivot supporters of rotating fire sticks or boring drills; larger ones may have seen service as paint cups; others as simply nut-cracking lap stones. To the latter use Col. C. C. Jones, in his "Antiquities of the Southern Indians," pp. 315-20, assigns those found in Georgia, which are, in the main, of steatite, or soapstone, a rock as soft as, or softer than, sandstone. Some found in Ohio by Messrs. Squier and Davis, with shallow circular depressions in hard stone, they thought might have been used as are the "work-blocks" of modern copersmiths in which plates of copper are hammered to give them convexity. Col. Chas. C. Whittlesey styled those found in lake regions "spindle-socket stones." In 1886 Dr. Charles Rau, then curator of prehistoric antiquities in the Smithsonian Institution, published an elaborate monograph, with thirty-five pages of illustrations entitled "Observations on Cup-Shaped and Other Lapidarian Sculptures in the Old World and in America," which is incorporated in Vol. V. of the Smithsonian "Contributions to North American Ethnology." In this work he reviewed all cupped or pitted stones then known in the United States, and figured a few identical with those described by Mr. Fountain; but, after fully discussing their probable and possible design and uses without satisfactory conclusion, he says: "It was my chief object to draw attention to a very curious class of North American antiquities as yet but very little known, and thus to bring them within the range of a closer observation, which possibly may lead to a better understanding of their meaning." And that is yet the unadvanced status of the problem.—Editor.)

EDITORIAL.

The field of controversy, or, more properly, of evidences claimed to establish the preglacial, or interglacial, existence of Man in America, seems to be narrowed down to the valley of the Delaware River. The views of many of our most eminent men in the sciences of Anthropology and Geology, who have personally inspected and studied that interesting region and its products of ancient human art, have been heretofore published, with the result of leaving the question of relative age—upon which the whole matter hinges—still in doubt. The instances of discovery of rudely-shaped flints, presumably fashioned by human agency for implements—not to mention the grooved and polished stone axes, stated by Professor Claypole to have been found in the boulder clay—are too few, too equivocal and isolated to be accepted as reliable proofs of man's occupancy of this continent before, or between, its periods of glacial investment.

The present stage of progress in this investigation is ably presented to the public in three papers read before the Anthropological Section of the American Association for the Advancement of Science, at its late meeting in Detroit, a comprehensive synopsis of which we will endeavor, at an early day, to lay before our readers. The first paper read in this discussion was in the affirmative, by Prof. F. W. Putnam, of the Peabody Ethnological Museum, entitled "Man in the Delaware Valley;" followed by Prof. W. H. Holmes, now of the U. S. National Museum, in the negative, on "Archaeological Researches in the Trenton Gravels;" the third paper was by the distinguished geologist, Prof. R. D. Salisbury, of the Chicago University, on "The Geological Age of the Relic-Bearing Deposits at Trenton." These clear expositions of all controversial points involved, taken in connection with the testimony of Mr. Volk, who has delved in the Trenton flats for ten seasons, and the keen, tireless observations of Prof. H. C. Merceer, who has camped on the ground for several seasons, leave the unprejudiced student undecided, perhaps, but not convinced of the geological an-

tiquity claimed by some for the so-called palaeoliths of that valley.

We must say to our patrons that it is utterly beyond our power to have cuts made of every rough drawing or photograph of odd or fine specimens sent to us. An artist must here be employed to reproduce both in India ink to make them available for the electrotyper. These illustrations are quite expensive; and, while we gladly have them made to accompany papers requiring them, or descriptions of extraordinary examples of aboriginal art, we are compelled to forego the pleasure it would afford us to place on our pages all the pictures sent us by collectors and students, and can use but a limited number of them. We will beg of those desiring to have representations of their specimens appear in this journal to send us, if possible, finished drawings of them, in India ink, on heavy white paper free from all writing and figures. And, if more than one specimen is to be figured on the same plate, place them as compactly and tastefully together as may be convenient, to economize space.

There were in our last number several notices, from our readers, of specimens similar to the perforated and notched ball of banded slate reported by Mr. Almer Hegler and figured in our July number; but in none, we believe, was there any attempted solution of the use or purpose of the relic. It would be very gratifying to us to have someone occasionally offer an hypothesis—or even a rough guess—of the probable mode of employment of the strange and unusual objects left us by the early aborigines. By discussions of this kind the intentions of the ancient lapidaries might sometimes be deciphered. In this connection we wish to say that we regret having, some time ago, criticized a valued contributor's theory of the so-called "plummet's" real office; and would be much gratified to publish the views of others on this obscure point. Simply to relegate the finely carved and carefully finished stones, that in our advanced civilization we would be unable to find any practical use for, to "ceremonial rites," only checks further investigation and explains nothing.

This season, now closing, has been a very busy one in exploring and investigating prehistoric monuments and remains. We deplore the fact that much of this work has been done to satisfy idle curiosity alone, or for sordid pecuniary gain, at a dead loss to science. Yet, a great deal of it, as we hope in future to inform our readers, was conducted by men of learning and for the sole purpose of extending our area of knowledge in this field.

J. F. S.

ANTHROPOLOGY AT THE UNIVERSITY OF CHICAGO.

The subject of Anthropology has been taught at the University of Chicago ever since that institution opened on the first of October, 1892. The courses have been in charge of Prof. Frederick Starr, who has directed all the work on the subject. At times, during Professor Starr's absence, courses have been given by Dr. Merton L. Miller. The courses cover a considerable range of subjects—Physical Anthropology, Ethnology, Culture, History and Prehistoric Archaeology, and are so arranged as to cover a period of two years, at the end of which time the series is repeated. The list of courses so far offered is as follows:

1. General Anthropology, based upon Tyler's little book.
2. General Ethnology, Brinton's Races and Peoples being used as an outline.
3. European Prehistoric Archaeology.
4. Physical Anthropology; following Topinard's Anthropology.
5. Special Ethnology; one of the great races being made the subject of study. So far the American race has been the only one studied.
6. American Prehistoric Archaeology.
7. Mexico; a course in Archaeology, Ethnology and Somatology.
8. The Pueblos of New Mexico and Arizona.
9. Laboratory Courses in Physical Anthropology, or Somatology, in which Topinard's Elements of General Anthropology is used as a manual.
10. Japan, a study in Ethnography, of the culture stage of civilization.

All of these courses have been taken by classes. In addition to them, there has been

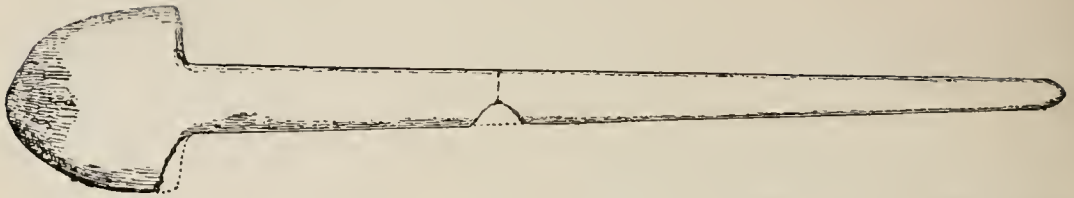
directed work by special students in certain lines of original study. The smallest number at any one time in the department has been two students, the largest number sixty-six. There are at present enrolled for the summer quarter some forty-four students. The enrollment is usually smaller in the summer than at other times of the year.

The University has a complete instrumental equipment for work in Physical Anthropology. It has also a fair amount of material in the way of skulls and bones of anthropoids and man. It possesses a considerable series of plaster busts of various races and of degenerate or defective persons of the white race. The great series of diagrams and charts made by the Department of Anthropology of the World's Columbian Exposition belongs to the University. They are of great importance for class instruction. Besides these a considerable amount of photographic and diagram material is in constant use.

It has not so far been the policy of the University to make large collections of objects. It is very near the vast collections of the Field Columbian Museum. At the same time it has, either in actual possession or on deposit, various series representing the Archaeology of Mexico, the cliff-dwellings and cave-houses of Utah, and the Ethnography of the Alentian Islands and Japan.

The Library, while making no claim to completeness, contains more than five hundred of the standard works upon the different branches of the science. Twenty-nine periodicals of a professional kind are regularly received.

It is the plan of the department to publish new material which may come into its possession in the form of bulletins. These will be octavo in size, the number of pages varying. They will appear at irregular intervals but as rapidly as material is gathered and their publication authorized. The first of the series which has appeared is "Notes on Mexican Archaeology." It is by Professor Starr and deals with some curious and interesting wall paintings of Mexico.



A STRANGE RELIC.]

Editor of *The Antiquarian*:

A farmer near this place, while plowing in one of his fields, found the specimen of which I send you a drawing in half size. He thought it was a piece of iron, and knocking it on his plow handle to remove the dirt that adhered to it, broke it and was then surprised to discover that it was a stone. It is eleven inches in length, two and three-fourths inches in width across the blade, which is three inches in length, and tapers down to a broad, dull edge. One shoulder of the blade had been, at some former time, broken, and then repolished, perhaps by long use; for the surface at this broken place is still not as smooth as the balance of the implement. The handle, eight inches long, is, for an inch above the blade, very nearly square, nearly an inch on each side; and from that it is worked round and gradually tapering to the blunt end. The material from which it is carved is a dense, hard, green stone slightly mottled with spots and lines and has a waxy lustre. It is highly polished all over excepting at the place where it had been previously damaged.

I regard it as the most interesting prehistoric relic in my collection, and have never seen anything like it in any other.

I have failed to get any information concerning it from the National Museum, and, hence, send it to you to find out what it is.
Waynesburg, Pa. A. J. WAYCHOFF, A. M.

(This is one of another class of strange stone objects for which no certain practical use has yet been discovered; and which—to compromise with our ignorance—can be conveniently placed among the “ceremonials.” They are, however, by no means uncommon, being seen in all the principal museums in the country, and are figured and described in many works on American prehistoric antiquities. We do not remember of having seen one of them discovered west of the Mississippi; and they must have been very scarce north of the Ohio river. We cannot recall one—of this form and material—found in Illinois, and can find no mention of them in Squier and Davis’ “Monuments of the Mississippi Valley;” nor in the “Archaeological Report of the Ohio Centennial Managers,” or in M. C. Read’s “Archaeology of Ohio,” or in Henry A. Sheppard’s “Antiquities of Ohio.)

General G. P. Thruston figures this relic on page 29 of his “Antiquities of Tennessee,” and says, “we call them ceremonial spades, or maces.” On another page he has reduced figures

of two others, of which he says: “Captain Johnson has two of these ceremonials in his collection, one fifteen and three-fourth inches long, the other, a delicate little type, five and one-half inches in length—the largest and the shortest specimens we have yet seen. These implements are too dull for cutting purposes, and must have been too valuable for use as ordinary agricultural or mechanical tools.” On page 302 of his “Antiquities of the Southern Indians,” Colonel C. C. Jones has the exact counterpart of Professor Waychoff’s drawing, and says that it represents a spade made of green stone that was found in a Tennessee grave mound by his brother, Dr. Joseph Jones, and that it is beautifully polished, seventeen and a quarter inches in length, three inches of which is the length of the blade. He adds “We suppose this to have been an agricultural tool.”

In Dr. Chas. Rau’s “Smithsonian Archaeological Collection,” page 25, is the cut of a specimen of this kind from South Carolina, which the Doctor mentions as “resembling a diminutive spade, although it is not asserted they were used in that way.” Under the class title of “Spuds,” Professor Gerard Fowke also figures one in his paper on “Stone Art,” page 3, “Thirteenth Annual Report of the Bureau of Ethnology,” that came from Monroe county, Tennessee; but ventures no opinion of the ancient utility or design of spuds—of that kind. We have always regarded these oddly fashioned stones as tools; valuable mechanical aids in the domestic occupation of the Indians who made them, and perhaps used for a variety of purposes, as yam digging, bark peeling, manipulating clay for pottery making, etc.—Editor.)

In the splendid reports of his explorations of sand mounds in Florida, Mr. Clarence B. Moore figures two fine specimens of these “spade-shaped implements;” one on page 18 of his “Certain Sand Mounds of Duval County,” the other on page 22 of his “Certain Sand Mounds on St. John’s River,” and says of them: “Two implements of the rare form known as spade-shaped were found in Mt. Royal. Both were of polished claystone. The smaller, with a length of 9.5 inches, had four notches of tally marks upon either side. It was found 18 inches below the surface, 25 feet due south of the center of the mound.



The larger, eleven and a half inches in length, came from about the center of the mound, at a depth of 5.5 feet from the surface. * * Unlike so many of our aboriginal relics this implement is of a type unknown in Europe. It is of comparative rarity, though of wide distribution, in the United

States. * * * We consider them of too infrequent occurrence to suggest their employment for any practical use. We have been able to learn of none showing breakage or signs of use, and some reported are too small in size to render them useful as weapons. Moreover, we think the tally marks on certain specimens connect them with the ceremonial class."



Editor of The Antiquarian:

The bird amulet, of which I send you three views, top, side and bottom, drawn in half its actual size, is a very fine specimen, cut from green porphyry mottled with yellow, which colors the engraving of course fails to reproduce, and is finely polished all over. It was found back of this place in the country, about three miles from the river, on what is locally known as Oak Hill. It was sent some time ago to the National Museum for inspection and there it was copied in plaster. One point of interest attaching to this amulet is its strong resemblance to others of the same class found in distant and widely separated places. Rev. W. M. Beauchamp, of Baldwinsville, N. Y., has one very much like this found at Grand Rapids, Mich. He is also carved from porphyry, but of a sienna tint mottled with dark greenish gray, and has eyes (or ears) more projecting than this one.

The perforations on the under side, for retaining the suspending cord of the talisman, or totem, it will be observed were made by drilling down on either side of a narrow isthmus of the stone, the opposite holes meeting beneath it. In the

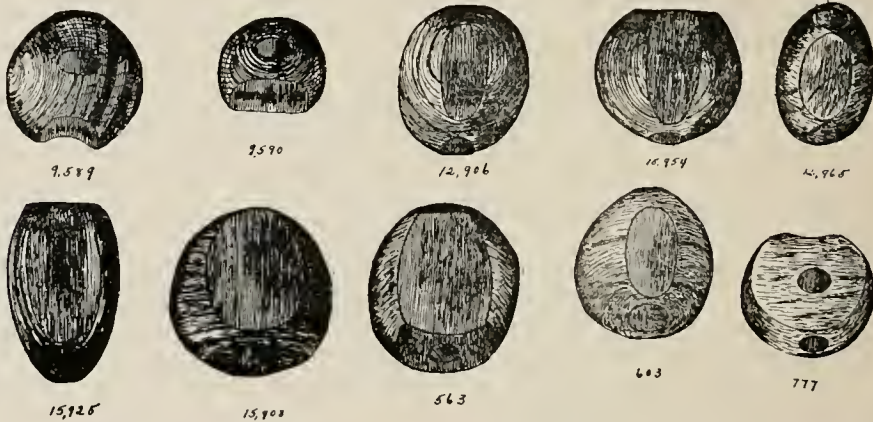
upper perforation of this specimen the band of stoue across it seems to have been worn through it. Some persons think that this opening in the connecting band of the rock was left open designedly by the artisan who made it, but it seems to me apparent in this instance that it was worn through by friction in the course of long use. In some of these objects there are rudimentary feet made purposely for the cord holes to go through. These beautifully carved stones are variously styled amulets, totems and talismans; and they very probably had some sacred significance. Mr. Beauchamp has advanced the hypothesis that they were fetishes analogous to those of the Zunis; the charmed arrows being bound on the back—as those of the Pueblos—by strings

passing through the basal holes to keep them from slipping and to keep them firmly in place. This could be done by simple projections—particularly in the large and broader specimens—with much less labor than drilling the holes; and it does not account so well for the wearing through of the holes.

The flints, of which I send a drawing, were all found within a mile of this place. The arrow point N. 3 (all drawn in half size), is of a very fine type, though the drawing fails to show to advantage its very neat workmanship. They are all chipped from the same amber-colored cherty flint characteristic of this region.

LE ROY J. LAPPAN.

Newark Valley, N. J.



PECULIAR STATE OBJECTS.

Since Mr. Hegler's open letter, published in the July Antiquarian, I have received a number of communications relative to the singular specimens which Mr. Hegler described. In speaking to the Curator of our Museum, Mr. Moorehead, he gave me the keys to the cases, and after a few minutes' search I found ten peculiar specimens from various parts of Ohio. As will be seen by the plate printed opposite to this page, some are very like Mr. Hegler's specimen, while others are different. No. 777 has not only the groove, but two perforations. It is also flattened on each side. All the specimens are made of slate, highly polished. Some are egg-shaped, some elongated, some greatly flattened at one end, some oval upon the under side and others flat. The figures will give readers an idea of the various forms.

No. 12,965 was loaned by Mr. M. E. Thrailkill to the Ohio Archaeological and Historical Society, and was found in Franklin county, O. Nos. 9,589 and 9,590 were in the J. L. Hughes collection found in Holmes county, now owned by the Ohio State University. Nos. 15,908, 15,925 and 15,954 were collected by Marshall Anderson in Pickaway county, whose collection is loaned to the Ohio State University. No. 12-

906 was found by Dr. Gaston in Adams county, Ohio, and loaned to the University. Nos. 563, 603 and 777 were secured by the Curator in Warren county, and are the property of the University.

The figures are one-third the size of the originals. There are some long tubes in the state collection, of Huronian slate which are either flattened or slightly grooved.

It would be well for some of our better posted archaeologists to give their views upon these singular specimens. Counting large and small ones, slightly or deeply grooved, and flattened, there are 20 in our collection. This number does not include those which are apparently tubes.

C. L.

Editor of The Antiquarian:

Having today, while visiting Fort Sheridan, made a more careful examination of the ancient workshops of white flint along the Sheridan road in the Highland park, Winnetka region, Chicago, I find, as heretofore thought, that these workshops of white flint are more extensive and more ancient than those at which chert—lake chert—was chipped, and also that the material (refuse) is of an order which in most plain manner tells us that these ancient workshop sites

were those at which the material was roughed out into the untrimmed large leaf-shaped article—few, if any, of the finer ("finished chips" as I have named them) chips being found, and the hammerstones too are larger. I have yet to find the workshop sites at which this white flint was finally trimmed down into flint implements such as arrow and spear points, etc. But as these beds of broken flint masses occur at a lower strata than those of chert we may presume that the finishing workshop sites too are in a lower stratum; otherwise we are forced to arrive at the most logical conclusion that the white flint was here only quarried and reduced in bulk and then carried to some distance, there to be still more reduced and finished into the desired form. I have some of the refuse of a workshop at St. Charles—it is of white flint and of the finer chips. Did the aboriginal inhabitants of the St. Charles region quarry their material at Highland Park and Winnetka? We are unable to answer this question to our satisfaction.

Along the beach of Lake Michigan here at Chicago, one finds both the workshops at which chert was roughed out, and also places at which the Flint Chipper finished his work—at the former places the refuse is rough and uncouth like that found in the Highland Park-Winnetka region, and no pottery fragments are associated with such finds, whereas at places at which the finer chips occur one also finds bits of pottery, bones, etc., bespeaking the place as the site of an Indian camp or village.

Now another question arises as to where the ancients who worked the white flint quarries resided during the period of their working these quarries, for it is most reasonable to infer that some length of time was required to work the quarry and rough out the rude leaf-shaped article. (I use the word "quarry" here in a limited sense, the white flint is found in nodules rather than in layers—like the chert, it is of glacial origin—the deposits of the material is of glacial origin, understand us correctly in this matter.)

The whole region, along the lake shore, high bluffs, is still in a state of wilderness, no farms or worked ground is found, and it may be that when the region will have become crossed by roads and otherwise that these campsites of the visiting quarrymen may be discovered; but if found it will be proven that these visitors belonged to a more ancient race and that their camp and village refuse will be found in a lower stratum and beneath that of the more recent historic Indian tribes dwelling in these regions at the time of the coming of the white man. Even as it is, I am enabled to make this statement, while examining the territory, and it is quite extensive, of Fort Sheridan, this day, I found a workshop site at which chert was chipped, the material of which was quite near the surface, in humus soil, whereas the refuse of the white flint quarries is found in the yellowish brown loess soils and gravels of the supposed quaternary epoch. This will set you aright.

Now the question is: Were the people who worked the white flint quarries of the Highland

Park-Wannetka region identical and the same with the people who worked the chert of the Highland Park-Wannetka region? Professor Mercier's two village sites, one below the first, is here duplicated, but listen! two epochs intervene in the Chicago discovery—a 1000 years may approximate the time. Here logic asks a question: Are Roman historic events to be considered as occurring during and within the Quaternary period.

Chicago, Ill.

KARL A. DILG.

Note.—You see I am very careful in my researches and conclusions.—K. A. D.

Editor of The Antiquarian:

In the closing paragraph of the "Antiquities of Tennessee," the author states that the Mound Builders of the Mississippi Valley "had probably reached the zenith and decline of their power when Columbus set sail upon his voyage of discovery."

Your editor, in a brief review in the August number of your valuable publication, states that he is inclined to think this view is "overdrawn in some respects, and at variance with the generally accepted theory of the gradual evolution of indigenous Indian civilization in America." He seems to think that the Mound Builders were making continued and steady progress toward a higher plane of semi-sedentary barbarism, until their progress was suddenly interrupted by the advent of European art and culture.

We think it is an error to assume that in prehistoric times the Mound Builders and other American aborigines were making steady and uninterrupted progress toward a better state, or that there was a continuing development, or evolution in their culture, without periods of retrogression.

This is not the lesson that history teaches us, even as to the civilized races. There are so many causes that might tend to arrest ethnical or racial development, that we cannot ignore their influence. Consider the effect of a century of wars, invasions, pestilence and famine upon the progress of tribes of village or Mound Building Indians in the Mississippi Valley, and we may have the key to their apparent decadence. Development and progress, followed by degeneration and decay, seem to have marked the career of many historic races. The prehistoric remains of the North American Indians, whether of Mexico or the northeast, indicate that they made slow and uncertain progress toward a better state in the scale of civilization. They have had a pathetic history. In their progress there were evidently many reverses and periods of retrogression.

They never seemed to reach a stage of development necessary to permanency and practical civilization. They never grasped the principles of order, submission and union necessary to stability and enduring progress.

Some of the remains of the arts and industries discovered in the mounds and graves of the Mississippi Valley and adjacent sections, certainly indicate ethnic conditions, in certain centers of development, considerably above the cul-

ture status of the most advanced tribes of Indians that inhabited our frontier at the date of the first European settlements. The engraved gorgets or breastplates of shell from the southern mounds, the incised or engraved copper plates from Georgia and Illinois, the Ohio tablets of stone and the copper treasures from the Hopewell mounds, the occasional fine antiques from Alabama, Mississippi and Arkansas, the remarkable objects of flint from Middle Tennessee, are all representative types of this more advanced culture; whether local or general, a culture, of course, essentially primitive in its main characteristics. Some of the decorated and graceful vessels of pottery found in the southern mounds and graves must also be classed with the other evidences of this relatively more advanced state of society.

It is impossible to fix the date even approximately when this highest state of aboriginal culture was reached. This is a problem as yet unsolved, and one that may remain unsolved; yet it seems to be the general opinion of archaeologists, based upon present available evidence, that the period of the highest development of aboriginal culture in the Mississippi Valley antedates the Columbian discovery. The writer therefore felt justified in stating that the Mound Builders "had probably reached the zenith and decline of their power when Columbus set sail upon his voyage of discovery."

The fact that this is the writer's vacation is his apology for this rather brief communication upon a subject so involved in complications.

G. P. THRUSTON.

Beersheba Springs, Tenn., Aug. 23, 1897.

ANTIQUITIES OF FOX RIVER, WISCONSIN.

Editor of The Antiquarian:

(For eighteen years my home was in the midst of the region I have attempted to describe, and I was led to write this brief article, hoping that more students of archaeology would have their attention drawn to what I consider one of the most valuable relic fields in the great northwest.

(Mr. Perkins, the owner of the collection referred to in my paper, formerly lived in Wilmington, Wis., and may still reside there, but I cannot say for sure because I have not seen the gentleman for eight years. So far as I know we are not related, the similarity in names being merely a coincidence.)

If you will look upon the map of the state of Wisconsin you will observe at a glance that the Fox river is the connecting link in the Mississippi water course between the great lakes and the Gulf of Mexico.

This stream, after following a very irregular course in a northeasterly direction, empties into Green Bay. At Portage, the Fox and the Wisconsin rivers are separated by only a few rods of lowland, still the latter stream flows southwest and at Prairie du Chien unites with the "Father of Waters."

RECENT DISCOVERIES.

Near Columbus, Ky., the recent flood exposed a number of burials. With the skeletons were found a number of specimens of pottery. A stone idol 12 inches in height, cut out of very hard granite, was dug up near the head of one of these skeletons.

The British Columbia Natural History Society has been excavating near Victoria. The papers report that hundreds of curious cairns have been opened and a number of skeletons were found.

The St. Paul, Minn., Dispatch, of recent date, published a detailed account of an exploring expedition recently sent out by it in charge of Louis De Lesley, to locate, survey and define the prehistoric mounds of the Missouri River valley in South Dakota. The party located two distinct fields of prehistoric mounds and one well-preserved fortification, within a distance of five miles. Both groups of mounds are of considerable magnitude. The largest group was located opposite the mouth of Grand river, and contains 800,000 square feet of territory, with 84 counted and surveyed mounds upon the field, an elevation of 175 feet above the Missouri river. One of the largest mounds was opened by the party and immense quantities of prehistoric specimens secured and brought to the city.

The second field of mounds within this same area was four miles distant and to some extent obliterated by the plow. But there were upwards of 50 mounds in this field and prehistoric pottery, arrows and stone implements were found here also in large numbers. Close to the edge of this second field, which is in Walworth county, South Dakota, the party found several trenches containing human skeletons and several skulls were brought back. The skulls are harder, heavier and thicker even than those of a negro and much unlike those of the Indians of the Columbia age.

A mile and a quarter from this place the party located a well-preserved fortification of earth, still showing the outer and inner breastworks. The gateways or entrances to the fortifications are still marked. Here, too, the evidence of prehistoric character was abundant and a number of stone implements were secured. It seems as though an entire prehistoric settlement had been properly located, including its means of last defense. The field invites the closest attention on the part of archaeologists.

THE ANTIQUARIAN.

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MONTEZUMA'S WELL.

This great crater like Hiatus in the earth's crust is one of the many anomalies of nature to be found in Arizona. It is located on Beaver creek about twelve miles above old Camp Verde and near the road leading from the Verde valley to Flagstaff. It is an anomaly well worth the attention of the geologist or the archaeologist.

There are many descriptions of this wonder extant, and to add another would be superfluous unless there be some good reason. I think I have a reason, otherwise I would remain silent.

The well is situated in a hill, in general appearance exactly like many others, in this immediate vicinity, and one unacquainted with its locality would not be likely to find it, unless by accident, or by carefully following directions.

It is called a crater by some, but this, however, is a mistake, as there is nothing about the well that would indicate that it had such an origin, but the indications are

that the summit of the hill had sunk, or that when the great cataclasm came that elevated the immense body of land composing the Mogollon mountains from the bottom of the sea, that this plug, so to speak, was left behind. The walls of the well are of unburnt limestone and in places nearly perpendicular. It is very similar to the "sink-holes" in the middle and southern states except in this case the break is abrupt and in solid limestone.

This well, so called, is a circular opening four hundred and sixty-six feet in diameter, the measurements taken at the rim. The lake is perhaps one hundred feet less. It is a little longer east and west than from north to south. The walls are abrupt, except at the east, here there is a talus formed by fallen cliff houses. At this point ascent and descent is comparatively easy. At the southeast corner (if a round hole can be said to have corners) there is a cave extending about forty feet into the cliff toward Beaver creek. Beneath the floor of this cave the lake or well finds a subterranean

outlet. The water rushing through the narrow rock channels is plainly audible to one standing in the cave. The amount of water making its exit at this point (and this is the only known exit) is estimated at about one hundred miners inches and is used by Mr. William Back to irrigate his farm, situated just below the well on Beaver creek.

There are many reports in circulation regarding the size of this wonderful well, and some of them by people who are regarded as authority. To determine accurately the circumference, diameter, depth of water, etc., I determined to confirm or refute these reports by a series of carefully conducted measurements. On May 21, 1897, in company with J. A. Rokohl, I went to the well fully equipped for this purpose, using telephone wire and cast iron ball for sounding. Finding that there was no boat upon the lake, I secured by the courtesy of Mr. Back a few logs, out of which a raft was constructed, and by the aid of Mr. Back's son and Mr. William Martin we had everything ready on the following morning to begin our work.

Beginning at the southwest and about fifty feet from the shore, we took three soundings along the southern shore of the lake, when reaching to within about fifty feet of the east shore we crossed over to the north side taking three more soundings, then propelling our raft down the center between these two lines, three more soundings were taken, thus covering the entire field to the center of the lake where one would expect to find the deepest water. The following table gives the results of our measurements:

- First sounding, 45 feet.
- Second sounding, 51 feet 6 inches.
- Third sounding, 59 feet.
- Fourth sounding, 64 feet 6 inches.
- Fifth sounding, 66 feet 4 inches.
- Sixth sounding, 70 feet 2 inches.
- Seventh sounding, 74 feet 9 inches.
- Eighth sounding, 77 feet 1 inch.
- Ninth sounding, 83 feet.

The area of deep water was so thoroughly gone over and the measurements so carefully taken that I doubt that any subsequent investigation will materially change these figures.

Mr. Charles F. Lummis gives two accounts of this wonderful freak in "Some Strange Corners of Our Country." He gives a very good general description, but unfortunately for those who must depend upon descriptive writers for their knowledge, he has woven in too much romance. On page 288 he says: "The diameter of this basin approximates two hundred yards." Our tape line makes the diameter four hundred and sixty-six feet.

In the Land of Sunshine, a magazine published in Los Angeles, California, and edited by Mr. Lummis, February number, page 105, he says: "This sudden well in the gray limestone is about 80 feet deep from the rim to water level. The walls are apparently as circular as a man could make them. The tar black lakelet at the bottom is of an unknown depth. A 380-foot line, at my last visit, 1891, having failed to touch bottom."

Again in "Some Strange Corners of Our Country," page 138, he says: "This well is a huge 'sink' of the horizontal strata in one perpendicular undermined spot, the loosened circle of rock dropping forever from sight into a terrible subterranean abyss which was doubtless hollowed out by the action of springs far down in the lime rock. As to the depth of that gruesome black lake there is not yet knowledge. I am assured that a sounding line has been sent down three hundred and eighty feet in a vain attempt to find bottom, etc."

If one were to read only one of these accounts he would be likely to take it as authority. But in reading both one is likely to ask which if either, is correct. Did Mr. Lummis personally let a line down or have it done under his supervision, or has he, as related in "Some Strange Corners of Our Country," heard the rumor that a line had been let down three hundred and eighty feet and afterwards concluded that it had actually occurred at his last visit in 1891.

It was these conflicting rumors that caused me to make the investigations that I did, and to correct these errors is my reason for adding another narrative on Montezuma's well to the many that have been published.

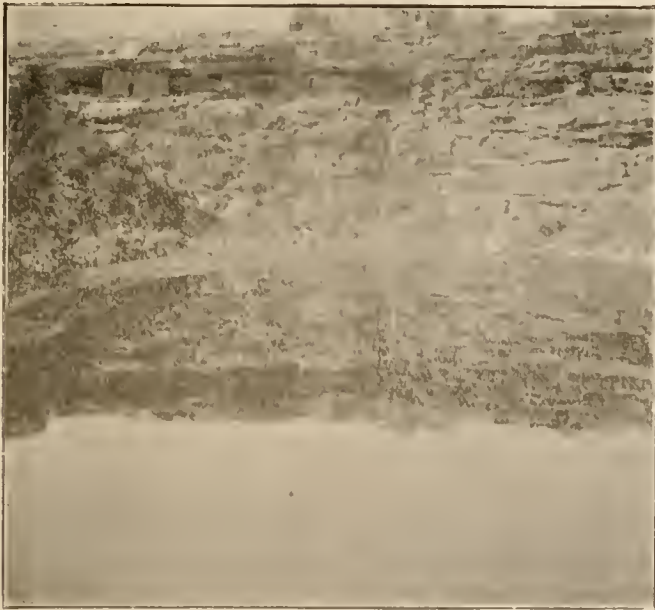
In addition to the anomalous geological features presented by this well, the only one of its kind known to civilized man, it was the home of prehistoric man. Perched high up in the cliff on the west wall of the well there are two cliff houses in a fair state of preservation, as shown in the illustration.

The cave at the southeasterly aspect of the well also afforded accommodation to a goodly number of people.

Upon the surface there are two other ruins now fallen forming disordered masses

house would indicate that there had been originally twenty or twenty-five rooms on the first floor. Basing an opinion on the amount of debris one would conclude that the original structure had been two or more stories high. On the south bank of the well there is another mass of ruins. In this group fourteen rooms are discernable.

The easiest point of descent to the well is from the east. Here a considerable talus has been formed from fallen cliff houses that once lined this wall of the great well. Trails have been made through this great



of stone and mortar. One of these is situated at the eastern aspect of the well on the ridge of rock between the well and Beaver creek. This ridge is a narrow ledge of limestone twenty-three feet wide at its narrowest place. Beaver creek makes an abrupt bend where it strikes the cliff which deflects the water to the east and south. The creek has evidently been a factor in wearing the cliff away. A few feet south of this narrow point there are a few walls three or four feet high, the superstructure having fallen. The ground plan of this

mass of debris by stock going to the well for water.

As the visitor follows the trail, turning to the left, he comes suddenly upon the mouth of the cave hidden away by some trees that grow near by.

This cave was undoubtedly the strong hold of the people who lived in the cliffs, and on the surface, and was evidently the place where the records were kept. The walls of this cave show many hieroglyphics similar to those found in other parts of Arizona.

J. MILLER, M. D.

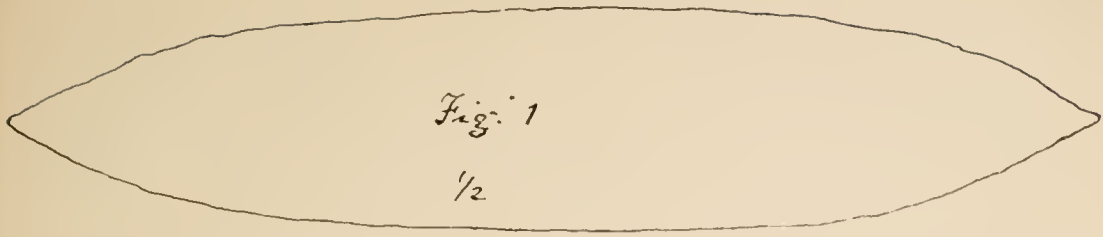
*SURVIVALS OF THE STONE AGE**And Evolution of Certain Stone Implements.*

I have read with much interest the able papers on the Survivals of the Stone Age recently appearing in the pages of *The Antiquarian*, including different accounts of the manufacturing of stone implements by the American aborigines. I notice that the published accounts of how the flaking and chipping of stone is done vary very much, for the reason, I judge, that different operators used different tools and methods to accomplish the same results. I am satisfied, from observation and experience (having made some very good arrow points myself), that the same results are obtained by a blow as by pressure; and that a well directed blow will produce a fine flake which could not be produced by simple pressure. Also that the large flakes cannot be detached by pressure in the hand, but may be by use of a lever, placing the stone on a firm base on the ground, and the short end of the lever under a root as a fulcrum, in this way, by percussive pressure, the same results can be obtained as by a heavy direct blow.

In chipping stone I obtained the best results by using the bone handle of a tooth brush which I ground at one end to a blunt edge. With this I cut through a pane of glass, making the cut but little wider than the bone tool, reversing the glass after removal of each successive flake by pressure in this way. By gentle and careful pressure I was enabled to secure very uniformly the sharp edge necessary for starting the next flake.

Having learned that an old Washoe Indian, known as "Tom," living in the central part of this state, still made fine arrow points, I sent him a piece of obsidian, by a friend who lives in that vicinity, with the re-

quest to make for me a few of them. I sent also, for the same purpose, a block of compact milky quartz. In a short time I received in return a dozen perfect arrow points from one to three inches in length beautifully made. Old Tom said the obsidian was not good material, having been burnt; but the quartz, he said, was perfect. The principal implement he uses in this work is a bone from the leg of a deer, ground down to about the fourth of an inch in diameter at the end used, and tapering at the other end to a flat surface a quarter of an inch thick. This is firmly lashed to a small stick thirteen inches long, the round end of the bone protruding half an inch beyond the end of the stick. This end of the bone is worn by use to a blunt point. The process followed by this old Indian in the manufacture of these weapons is, first, to break from the obsidian block, by peculiarly directed sharp blows, a number of flakes, from which he selected such as approximated in form and size the object he had in his mind. Then folding a piece of cloth, or buckskin, he laid this on the inner thick part of his hand, and on this laid one of the obsidian flakes which he held in place by the third and fourth fingers of that hand. Placing the point of the bone implement under the edge of the fragment of obsidian, he gave the bone punch a rolling motion over and against the sharp edge of the stone. In this manner he glided the bone tool back and forth along the line to be worked down, with each movement chipping off fine flakes. When he wished to remove large flakes he placed the point of the bone against the sharp edge he wished to detach and pressed the punch firmly endways against it until it yielded and split off. He occasionally whetted his bone implement on a granite boulder to keep it in proper form. To make the notches forming the tang of the arrow point, he used



the point of a butcher knife, first, by an upward pressure throwing off a flake, then, reversing the motion and throwing off a flake in the opposite direction, exactly as I had done in my experiments in cutting through glass with a pointed bone. This description of arrow-point making by the old Washoe Indian was written to me by the friend I mentioned, who watched every movement closely, is, I think, correct and one of the best accounts I have seen.

With the arrow points made by old Tom, he sent me a specimen of mesquite gum, very strong and adhesive, used by the Indians to confine the stone points in the clefts of the arrow shafts before wrapping them with deer sinew.

The California bows, covered with sinew, are much the best Indian bows I have even seen. I found them yet in use along the Klamath and Trinity rivers, where I obtained the most delicately pointed and finely finished obsidian arrow points, still in use there, that were ever made. I also secured from the Indians on the Klamath river, in upper California, several of their chipped blades of obsidian, measuring from eight to thirteen inches in length, and from one and a half to two inches in width, and very thin, tapering to a point at each end. I saw one of them of red obsidian eighteen inches long and three wide; but could not induce the owner to part with it. These blades I consider among the finest chipped implements of the stone art now in use. The first specimen of them I ever saw was in the city of Mexico, and it was there

called an Aztec sword. I afterwards, in 1889, found one similar in form and material (obsidian) on the plains of Teotihuacan in Mexico of which Fig. 1 is a representation drawn one-half of actual size. Fig. 2 is another specimen of obsidian, drawn one-half of real size, that I found in 1879 at the Pyramid of the Moon in Mexico. I also have one, the exact duplicate of Fig. 1, that I obtained on the Trinity river in California in the summer of 1890.

Among the upper California Indians I saw many of these splendid blades (like those found by Mr. Moorehead in the Hope-well mound in Ohio.—Ed.), that I could not buy; but I made every effort possible to ascertain their use. One Indian told me that their purpose was to indicate official positions in the tribe—insignia of authority. Another said they had peculiar significance in certain ceremonies and dances. Still another informed me that they marked a certain standard of wealth, or importance, in their tribal organization. Said he, "I no sell him. Now I am rich Indian; if I sell him I am poor devil." He was persuaded to sell it however on my promise to tell no one. I was assured that they were not weapons and never used as such. I was also informed that in some instances they were the common property of the tribe; and that in other cases, they were hereditary property of certain families.

I saw two of them that had strips of cloth firmly fastened around them, terminating in loops to go around the wrist, to guard against their falling and probably breaking

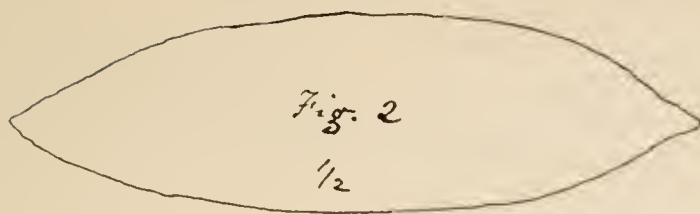
which indicated their employment in the wild gesticulations of their dances. They were always kept carefully secreted by the Indians who owned or had the custody of them; and this fact may account for their occasional recovery by the plow in isolated places, where they were buried and lost by the sudden death of the only persons who knew their hiding places. I was told of one two feet in length that had been lost in this way, and the closest search of the whole tribe for some years failed to discover it.

An Indian was pointed out to me as the possessor of one of these beautiful obsidian blades; but on asking him to allow me to see it, he denied having anything of the kind. I persevered in my request and helped it along with a few presents, when finally he pulled up a board from the floor of his hut and brought up a splendid specimen rolled and tied up in the soft inner bark of the cedar tree. Another Indian who had one, after long coaxing, consented that I might see it, but not until the next morning, having to get it from its hiding place in the woods during the night. Still another Indian, who had abandoned Indian customs, and had two of these curious objects, which I tried hard to secure; but he said "No." To show that he had become converted and adopted the white man's methods, I relate what followed. Said he, "These I have were my father's; he was big Indian chief; I no sell 'em. My wife's father was a big Indian, too; she got two he had; I sell you them." So, I obtained the two fine specimens through his improved civilization.

As another instance of our aboriginal tribes still living in the stone age, I will cite the mealing stones, still in common use by the Pueblos of Colorado, New Mexico, Arizona and California. I refer to the most primitive manner of preparing food by

grinding. Early man at first employed two stones for cracking nuts, breaking bones and shells, etc., to assist his teeth in pulverizing what he ate. This finally developed into the simple corn grinder, or METATAE of the Mexican Indians, a broad, flat stone upon which seeds and grain are crushed by blows, or by rubbing with a smaller hand stone, called a MANO. This I believe to be the earliest mechanical contrivance employed by man. By constant use, the large stone became worn so deep that the smaller stone was ineffective for rubbing, when it was turned and used endwise instead of broadsided, and the seeds were crushed by pounding instead of by rubbing; and thus was evolved the mortar and pestle, an improvement on the metatae and mano. Following this, in the upward line of progressive development, come the various forms of mortars, of stone, wood, metal and earthen ware, used by aboriginal people the world over more generally than any other mechanical aid in the preparation of food. Advancing to more modern times—before patent rights were known—another evolution of the metatae was one flat stone made to revolve, instead of rubbing back and forth, by hand power over another, the seeds to be ground being fed through a hole made for the purpose through the upper stone. Later on animal and water power were made to revolve the grinding stone; and still later came the great steam flouring mills that grind food for the world. Thus we note the transition from the age of stone to that of iron.

Another instance of the survival of stone implements is found in the continued use of stone axes and hammers by some of the Arizona Indians as well as by a few of the Sioux. In 1889 I found still another instance in the use of the stone adze handle by the Hoopa Valley and Klamath Indians. To this stone handle was fastened, at a



right angle, a cutting bit with sharp edge made of bone; sometimes of steel; but before they learned the use of steel, they firmly lashed to this stone handle an edged bone or stone, and found it an efficient implement for cutting out the charred wood in canoe making. It is now also in common use by the Chinook Indians of our northwestern coast. I found one of these stone handles many years ago in Illinois; but at that time had no idea of its use.

The evolution of the plow is another interesting illustration in point. The first plow was a forked stick drawn through the ground by women power. The plowing point of the fork would wear out; so, necessity, the mother of invention then in her youth, prompted the splitting of the worn stick and inserting in the cleft a stone that proved more durable. I have seen a primitive plow of this kind in use in Mexico; and have a specimen of an ancient stone plowshare of this kind finely polished by long service. An interesting fact to me is that the improved Oliver plow I now use has an adjustable point set in a groove or slot in the same way that primitive man set the stone point in his forked stick plow, yet, Oliver has a patent to protect his invention!

I have briefly mentioned the development of some of the appliances that man brought to his aid in meeting his first and greatest need—that of securing and preparing his food; namely, the metatae and mano, the mortar and pestle, the arrow and spear head, the hammer with handle of wood

and raw hide, the stone adze handle and stone-pointed plow.

The stone-pointed drill is still in use by some of the Pueblos. I have recently taken from a prehistoric village site about thirty hammer stones much battered and worn; some of them were originally cores or nuclei, from which flakes had been struck off, and all had been used as hammers, without handles, by holding them in the hand. Some of them were so rude that I would not have recognized their purpose had I not often seen such stones used in that way in modern Indian villages.

In conclusion I will mention one more class of stone carving that I have seen in recent use; namely, stone rings four or five inches in diameter; or, more properly speaking, perforated stones, circular, of that diameter, with central perforations one or two inches across. I have seen these described as war club heads in use by prehistoric tribes in Africa, South America, and elsewhere. They are also by some supposed to have been spindle wheels used in spinning wool or vegetable fibers. I cut thirteen of them from a fish net made and used by a Klamath Indian who sold them to me; but I could not persuade him to sell me the net made of woven wild hemp, an excellent drop net fashioned very much like those in use by the Swede fishermen about the piers in Chicago who weigh theirs with lead sinkers instead of stone.

HORATIO N. RUST.

South Pasadena, California.

NOTES ON DELAWARE INDIAN VILLAGE SITES—No. 3.

Before proceeding in pointing out the various outlying camp sites connected with the southern extension of the main Indian town or camping grounds alluded to in article published in the Antiquarian for September, it will be necessary to explain the extent of the town, and the peculiar situation in which the Shawnee Indians formed themselves after having become subject to the rule of the Lenni Lenape, or Delaware Indians.

The Delaware and Shawnees being the last of the prehistoric tribes that inhabited the section under consideration, and, as the Shawnees were protected by the Delawares from the incursions of the numerous bands of hostile tribes north and west, it is reasonable to suppose that the larger portion of the observation or outlying camps in a large scope of country were composed principally of Delaware warriors. In our description of this extensive and important primitive abode of ancient man as well as that of the two tribes noted above it may be best to insert here the more prominent features connected therewith; the reader bearing in mind that the description here merely refers to the main Indian village or villages lying along the eastern banks of the Delaware river scattered over a distance of three miles in length and attaining a width in places of a quarter mile or more.

In our preceding notes, already published, we referred merely to the southern portion of the village, or, we might say to the first ward of this complex town, leaving wards two, three and four and probably five yet unwritten, as well as the numerous outlying villages, observation points, mounds, jasper quarries and supposed crematories of these prehistoric people.

The Indians residing in the different

wards or villages, although included under the protectorage of the Delawares appear to have had a diversity of taste in manufacturing arrow points and pottery. These peculiarities will be brought out as we proceed with our description of the different sections of this extensive Indian town or camp site. In the present article we desire to call the attention of the readers who have followed us thus far to the outlying campsites and observation stations occupied in guarding the lower portion or first ward of this interesting Indian town.

About one mile east of the main village, on an elevated plateau near a spring of water, were found a large number of arrow and spear points, manufactured of jasper, transported from the Durham jasper quarries. The arrow and spear head refuse shows that the Indian artificer, in this instance, did his work, or had his workshop located in a huge, flattened trap rock. (1) Large quantities of refuse chips of argillite and jasper lie strewn about the workshop, indicating a long occupancy of the locality for this purpose, and as the location was a suitable one for a signal station, it was no doubt occupied by the Indians for this purpose. The manufacture of implements being a necessity to these people gave them employment when not engaged in quarreling with neighboring tribes, or on the war path. The arrow and spear points found here are similar to those found in the main village along the river.

(1) Trap-rocks are found at this spot of every shape and form imaginable. Some of them are as large as an ordinary dwelling-house, others lying in the soil having only four or five feet exposed to view, but are comparatively smooth over the exposed surface and from thirty to fifty feet in length and width and of uncertain depth. During pioneer times, before saw-mills had been erected, the farmers of that vicinity utilized the extensive flat-rock surfaces to thrash out their crops of corn, wheat and rye, using crooked limbs of trees for flails. This was before threshing machines and the thousand and one modern improvements in the art of grain-harvesting had been invented. Of course, the Indian artificer and his fellow warriors had left this section of country some years ere the white man took possession of the locality.

It may not be amiss at this point to note a tragedy occurring near this observation point early in the seventeenth century, as related by Eeen Clark, whose grandfather was a resident of that section at this time. It is as follows:

At or near the so-called "Top rock" an Indian maiden committed suicide by leaping from an extending ledge of rock down the cliffs (2) a distance of over four hundred feet.

It appears that during an Indian brawl, the dusky maiden's lover was slain, and brooding over her loss the girl became despondent and thus ended her life.

Along Gallows river extending to its head waters are numerous small campsites. These small sub-camps were no doubt outlying pickets guarding an Indian mortuary trail leading along the stream to an old prehistoric burial ground, and traditional crematory. About five hundred yards due north from the crematory was an extensive and long occupied primitive workshop and signal campsite. Numerous implements generally manufactured of argillite were found, such as arrow points, spears, knives, scrapers, hoes, axes, celts, pendants, banner stones, sacrificial stones, and nearly one hundred and fifty standing or erect stones. The stones were placed in quadrangular, or nearly so lines, about four feet apart and covered almost an acre of ground. Each quadrangle consisted of four stones firmly planted in the rocky soil, and in most instances the same distance apart, indicating that they were erected for special ceremonial purposes. The stones as a rule, were about two feet six inches in length, six

inches by twelve to fourteen inches wide, and extended above the surface of the surrounding soil a distance of half their length. The crematory was photographed by Prof. H. C. Mercer and Dr. C. C. Abbott in 1891. At that time there were probably thirty stones yet in position, a few that had on them faint marks of chipping. When the writer first saw the crematory in 1857 the standing stones covered an area of nearly an acre, and reminded one of a modern cemetery at a distance of half a mile or so, but on reaching the spot, and finding ordinary Potsdam sandstone, and slabs of argillite arranged in quadrangular squares, one is reminded of the fact that this weird and lonely place was, as told by the owner who was then seventy-five years of age, and whose ancestors resided in the vicinity during many generations, an aerial or surface burial place and crematory. (3)

After thirty years from the time the writer first visited the place great changes have occurred. The hands of the vandals have uprooted nearly every stone and carted them away for building purposes. The spot is overgrown with brush wood, cedar, and blackberry bushes. The stone cists once occupying the eastern side of the burial place have been destroyed by the plow; the white oaks whose leaves rustled in the fall winds in a weird way have been cut down by the avaricious lumber man, the ceremonial mounds, where the mourners in hilarious dances drove their sorrows to the winds during the mortuary exercises which were believed to be necessary to hasten the chemic change, and allow the departed spirit of the savage to be at peace, are all destroyed by the plow. Nothing but a dreary,

(2) The cliffs composing the so-called "Top Rock" are located about midway along the Pennsylvania pallsades, fronting the Delaware river, and are erected out of the Triassic rocks constituting the geological formation in this vicinity. These cliffs are from 200 to 450 feet in perpendicular height for a distance of over three miles along the river, when they gradually sink to a level of about 200 to 250 feet above low-water level.

(3) This mode of disposing of the dead was a common custom with some North American Indian tribes. It may be considered as peculiarly interesting, owing to the fact that three such burial sites were discovered in this section and one at Glen Gardner, in New Jersey. If not crematories, when everything in the surroundings testify, and tradition also has so testified, what are they?

weird spot, once the rendezvous of savage man remains.

Turning our attention now again to the signal or observation camps overlooking wards one, two and three, we find an important camp or lookout station on a rounded or eroded hill directly west of the first or main campsite or ward under consideration.

The hill rises boldly from the valley to a distance of about half a mile from the camp, and attains an elevation of several hundred feet above the Delaware river. The view up and down the river and across to New Jersey, and parts of Pennsylvania is simply grand; the picturesque and towering South Mountains to the north, covered with dense forests forming a fitting background to the scenery. On either side of the elevation, are running brooks of clear and limpid water where the Indians could obtain fish and water while occupying this campsite as a picket. Its extent could be traced by the fire-cracked stones, arrow points, net sinkers, implements of agriculture and fire sites, the latter where they cooked and broiled. As far as our knowi-

edge of the American Indian extends, it appears that he was a cultivator of the soil as well as a hunter and warrior. As in most instances in our early investigations (4) on questioning the older residents in the vicinity of these outlying campsites in regard to so-called "Indian old fields or cleared spots," they invariably answered that their ancestors often pointed to certain positions of the farms where grass and grain did not do so well and said: "there is the spot where the Indians raised their crops of corn."

CHARLES LAUBACH.

Riegelsville, Penna.

(4) It might be advisable to give the reader some knowledge in regard to our early investigations in the archaeological line. It may be noticed by the kind reader that we frequently refer back some years. Our field notes began in 1857; but, as a boy the writer became largely interested in the science as early as 1853, when Dr. Swift, of Easton, Pa., investigated a portion of an Indian village site whereon the thriving town of Riegelsville now stands. In aiding Dr. Swift, the writer became greatly interested in the subject, and as the literature in the archaeological line was then scarce, we did the next best thing and commenced bothering the aged men and women over a large scope of country for information in regard to what they had learned and what knowledge they had received from their ancestors referring to the North American Indians.

In this manner we gathered an immense amount of traditinary material, and soon after, in 1857, commenced explorations and making original research, hoping thereby to verify some, if not all, the traditinary facts in our possession. These will be brought out in future papers.

FIG. L.—Obsidian warped by heat ; $\frac{1}{2}$ size.

THE HOPEWELL GROUP.

WARREN KING MOOREHEAD.

(Continued.)

Some of the figures not yet described I will refer to briefly:

Fig. XXVI may stand for the four corners of the earth. It was very large, about 10 inches long.

Fig. XXVII is as yet unknown.

Fig. XXXI, a "saw" like pattern also cannot be explained.

Fig. XXXIV, the Swastika in thin copper 6 1-2 inches square. A smaller Swastika was also found. Dr. Wilson says:*

"These objects were all prehistoric. None of them bore the slightest evidence of contact with white civilization. The commoner objects would compare favorably with those found in other mounds by the same and other investigators. Much of it may be undetermined. It is strange to find so many objects brought such long distances, and we may not be able to explain the problem presented. But there is no authority for injecting any modern or European influence into it. By what people were these made? In what epoch? For what purpose? What did they represent? How did this ancient, curious and wide-spread sign, a recognized symbol of religion of the Orient, find its way to the bottom of one of the mounds of antiquity in the Scioto Valley? These are

questions easy to ask, but difficult to answer. They form some of the riddles of the science of prehistoric anthropology."

Fig. XXXV, a copper ring. Many were found from 1 to 4 inches in diameter. They were bracelets, anklets and ceremonials.

XXXVI. A large circular design 9 inches in diameter. Unknown.

Fig. XXXVII. Two diamond-shaped patterns like these lay one above the other, partly oxidized together. In them the symbolic eye and the four corners are combined.

Fig. XXXVIII. The 22-inch copper axe. It is too large for use, too well formed for the purpose of working into smaller implements. It was probably wrapped in hides and kept in the "medicine" lodge or treasure house as one of the valuables of the tribe. It also may have been venerated. The same may be said of the 17-pound copper axe from mound No. 23.

Fig. XLIV. Mica was frequently found cut into crescents, discs, etc. Several obsidians were covered on each side with mica cut into the form of the implement. This particular mica object may represent the human body.

Of the several obsidians shown in October and in this number, I will say that the chipping is superior to that indicated by the artist. In fact, the figures rather slight the originals. Some of the larger flakes detached from their flat surfaces were probably due to the excessive heat of the altar fire.

*The Swastika, U. S. Natl. Museum Report for 1894. Page 893.

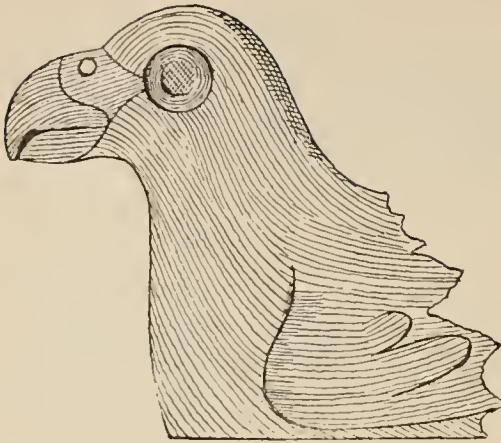


FIG. LII—Bird in Bone.

Obsidian was never found in any quantity in the Ohio mounds prior to our survey. I am told that the Hopewell obsidian came from the Yellowstone region, nearly 2500 miles distant. Think of it! These rare and delicate spears and knives transported by canoe or on man's back through a wilderness, among hostile tribes and clans—a distance of 2500 miles. We make the entire journey today in luxurious ease in the same time consumed by primitive man in getting as far as the mouth of the Little Miami. So, when we speak of aboriginal commerce and the bringing of unique works of ancient art 2500 miles, let us remember what that journey meant then, and what it means today!

Fig. LVII shows one of the typical copper axes, full size, from the deposit. All told there were more than 90 copper axes found in the mounds.

Figs. XLIX, LII, and LIII, showing an otter, and two birds were found with skeletons. They may stand for the totem of the individuals with whom we found them.

Of Fig. XXIX, Putnam said:*

*Symbolism in Ancient American Art. F. W. Putnam and C. C. Willoughby. A. A. A. S. '94.

"In this design, cut from a piece of hammered copper, are the same symbolic serpent eyes and the essential lines of the human face. *Ibid.

Commenting on Fig. LXI he observes that it "shows the design of Fig. LX reversed, and is probably the bear and sun symbol combined. Similar designs are expressed in some of the earthworks of the Ohio Valley."

Figs. LXIV, LXV and LXVI are to me the most important of all. As has been said they show us how the head-dresses or masks were worn. Moreover they are highly symbolic. (See December number.)

Let me quote from Professor Cushing again:

"Now, when we reflect that the peoples who reason thus are also in a totemic phase of development sociologically—largely because they do not reason thus—that they are inclined, each according to his tutelary deity or the totem of his clan, to emulate the animal (or supposedly living plant or thing) that is his clan totem, in both behavior and appearance so far as possible—in order to become so far as possible incarnated with his spirit—we find one of the many reasons he has for painting his face with the aspect,

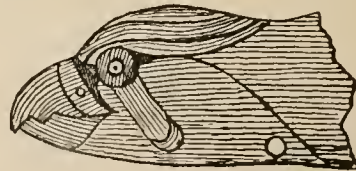


FIG. LIII—Bird head in bone.



FIG. L1V—Obsidian Implement; ¼ size.

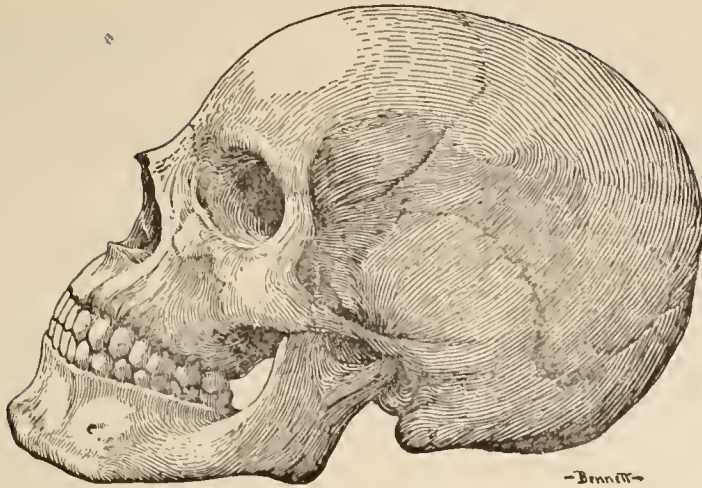


FIG. LV1—Type of "Long-head" Skull; Effigy mound.

or face marks, of some special animal. Moreover, in this reasoning may be found a primal explanation for his supposition that by putting on a mask he can more utterly change for the time being; can even change his totem or relationship; can become, to quote from the Zunis, 'That which he thirsts to become,' or 'Desirously needs to become, what tho' a God,' strictly according to the expression (and name) or aspect, of the mask he makes and marks and puts on. Thereby, it is believed that so far as he resembles in facial aspect or expression one kind of being or animal, or another kind of being or animal, he will become that being or animal, or at least be possessed by its spirit." (*1)

PHYSICAL PECULIARITIES.

Dr. H. T. Cresson, the anatomist of our survey, did much work upon the skeletons

(1) A Preliminary Report on the Exploration of Ancient Key-Dweller Remains on the Gulf Coast of Florida. Frank Hamilton Cushing.

exhumed. Here are some of his observations:

1. Both long and short-head people present, the latter predominating.
2. The short-heads not unlike those of Tenn., (stone graves).
3. "In thirty males and five females from the Hopewell earthworks, the males were from 18 to 70 years old, the females, 17 to 45 years, and children 8 to 15 years old."
4. The average height of the short-heads was 5 feet 4 inches, to 5 feet 6 inches.

Several persons have called into question the accuracy of Dr. Cresson's measurements. I will not give them here, (*2) but briefly state some of the peculiarities he observed in the skeletons and crania. I am not prepared to pass judgment on

(2) See pages 204-241, Chap. XVII. *Primitive Man in Ohio for Cresson's "Crania and Skeletons," etc.



FIG. LV—Obsidian Implement; 1/2 size.

his measurements, for I know nothing of craniology, but I do believe that a graduate of two of the best medical universities in Philadelphia and Paris would not knowingly deceive. I have faith in his general statements, and only contempt for those who would attack him now that he cannot defend himself.* (3)

"At Hopewell's earthwork 69 skeletons (*4) were exhumed, and of these, so far as we are able to determine, thirty were brachycephalic, 10 doliocephalic, 4 mesati-cephalic and the remainder were so injured by the great length of time which had elapsed since their burial and the distortions of earth pressure, that it was impossible to determine their classification."

* * * * *

"In some of the large mounds, especially those of Hopewell's earthwork in the Scioto Valley and mounds of the Little Miami Valley, the crania are remarkable for their great thickness and low, retreating, narrow foreheads, with heavy superciliary ridges, these at times being replaced by a flat plane similar to that shown in Fig. LXV, running backward somewhat horizontally, and then losing itself in the rest of the frontal bone as it mounts toward the parietals."

* * * * *

"The jaws are heavy and at times prognathic, with marked projection of the mental protuberance. Prognathism is not a constant feature of this collection. The dental foramen varies in its position to the right and left of a line drawn perpendicularly through the center of the second bicuspid tooth."

* * * * *

"Large Wormian bones are to be noticed in many of the brachycephalic skulls corresponding to numbers 3, 4 and 5 of Broca's scale, and in 7 crania epactal bones are found complicated with a multitude of minute Wormian bones. These bones seem to predominate among the brachycephali of the collection now before us."

* * * * *

"The bones of the skull are not heavy. Viewed in front, the skull presents an oval with the large end extending well behind.

(3)*Dr. Helborne T. Cresson died Sept 7th, 1894.
(4)*During the time he was on the survey.

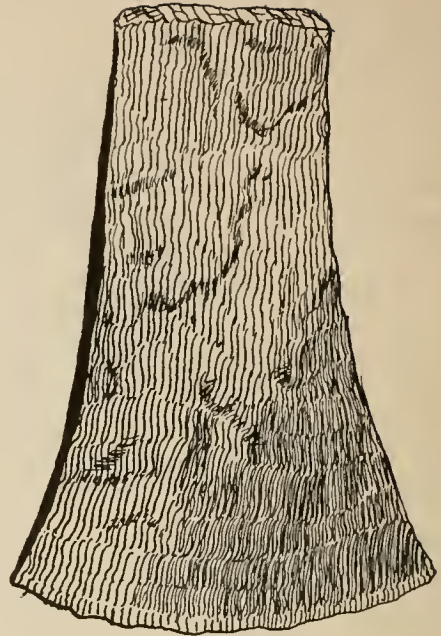


FIG. LVII—Copper Ax ; Full size.

caused by a somewhat narrow bulging occiput. The forehead is generally high and narrow, with strongly marked superciliary ridges. Posterior condyloid and mastoid equilibrium are noticeable features of a few of the crania, but as a general thing, ordinary equilibrium occurs most frequently."

* * * * *

"At Hopewell's earthwork, the frequency of perforation of the olecranon is remarkable. Variations are to be noticed in the shape of these perforations. In some of the bones both sides are perforated. others on one side only; perforations of the left side predominating. Sixteen perforated humeri out of 54 skeletons that were fit for examination gave us a percentage of 34 1-2. Of these humeri, 11 were of males, 4 of females; one of a child. The humeri of three skeletons were perforated on both sides; two on the right side and the remainder on the left side. At Hopewell's the majority of the perforations of the humerus were observed on the skeletons of the short headed people."

Rev. Stephen D. Peet, in criticism of an article of mine on the Hopewell Group, once said that I had not distinguished between the age of burials in the several mounds. That is a distinction no one can make save as relates to intrusive as against original interments. No one of experience in field work has the slightest difficulty in determining between the original or base-line burials and those of recent times. If Doctor Peet will read these papers carefully, he will find the answers to several questions which he has propounded from time to time. Page 241 states that skeletons 260 and 261 may have been the first interments, as they occupied the center of the effigy, and the individual mound over them was small. Whether one year or 50 years elapsed between the burials of 260-1 and 248, or between 281 and any other skeletons, it is impossible to positively state. I am of opinion, however, that in the case of the Effigy, one or two generations elapsed before the mound was complete; that its hard, burned floor was under the shelter of a structure, and that as shamans or chiefs died they were placed from time to time under small separate mounds. Surely no one will claim that the Effigy with its diversified burials, altars and deposits was erected during a brief period—say some few weeks.

Dr. Snyder has written me that he takes no stock in my suggestion that the discs found in mound No. 2 represent stored raw material. Dr. Wilson also believes they have another significance. I am perfectly willing to accept their views, and shall not harden my heart against honest conviction. Few implements of the same material as the discs were found upon the surface. None of the discs showed marks of usage upon their edges. It would be well if archaeolo-

gists would give an explanation of the deposit.

A careful study of the explorations leads one to conclude that the population of the Hopewell site was not very large, but was continuous—perhaps for one, two or even four generations. There are spots where no village site debris occurs. These may account for the presence of cultivated garden spots. Elsewhere the pottery, flint, bone, shell and broken stones are in great evidence. Assuming one lodge or dwelling to every seventy feet, if the territory showing debris was occupied at one time, there could not have been over 220 lodges, or 300 if the dwellings were more crowded. If only half or a third of the debris-marked land was occupied at one time, then the number would be diminished. In extent of occupation the place falls short of the Hopetown Group, much below Fort Ancient, and far below that of Madisonville. The recently discovered (by Mr. Loveberry) 30-acre village site at Bourneville, (Ross county, main Paint creek) also exceeds the Hopewell village.

But quantity and quality are vastly different. It is the art, culture and symbolism of the Hopewell people which places them above all other prehistoric settlements in the Ohio Valley. Certainly they ranked above the surrounding villages. Was their culture the result of a gradual development? Is it a subsequent culture to that of the Turner, Mound City and Harness groups? Were these other villages which also had copper and mica and effigies and symbolic designs, simply following in the footsteps of the Hopewell people? We cannot answer these questions now, and I leave them for other archaeologists.

(To be continued.)

EDITORIAL.

One of the chief missions of this periodical is to note the advancement of anthropological science in this country, and diffuse among men an account of the progress it is making in deciphering, from their relics, the story of America's early occupants. Every new fact bearing upon this point accessible to us is accurately noted and added to the aggregate of knowledge already gained. In this way, co-operating with others in the same field, a store of material is accumulating from which the reconstruction of primitive human life on this continent is becoming apparent. The researches of a small corps of indefatigable workers, but a few of whom are in government employ, are gradually lifting the veil that so long obscured the past and dissipating many of its seeming mysteries with the ready interpretations of science and common sense.

They have satisfactorily answered the old-time question, "Who were the Mound Builders?" by demonstrating the fact that they were Indians, the ancestors, remote or proximate, of some of the tribes of aborigines seen here by the first European voyagers. We now know that some of the Indians continued the practice of mound building, and many other practices and customs of their mound building ancestors, for some time after contact with European civilization. We also know, in a general way, the motives and incentives that impelled the Indians to build mounds, and the various purposes of their erection. Some of them were merely observatories and signal stations; some were for protection and formed parts of defensive works; others were elevated foundations for temples or other structures; the shell mounds were refuse heaps, and the effigy mounds were totemic, or tribal records. But the great ma-

jority of earthen mounds were sepulchral, and their construction the material expression of the same sentiment that beautifies our modern cemeteries with artistic monuments of carved marble and polished granite, and surmounts our church altars with the halo of a faith, unintelligible, but precious as life. It was not altogether superstition. With manifest dread of the future, and pusillanimous sacrifices for the propitiation of imaginary mythical powers, there were mingled those finest, loftiest of human feelings, love, affection and veneration. From the mounds, and other repositories of their dead, we have learned, not only the mortuary customs and funeral ceremonies of the early American people, but much of their mythology, and something of the fervor and frenzy of their religious impulses. From the great number and variety of objects preserved in their earthen tombs and stone graves, comprising every form of their weapons, utensils, tools, ornaments and fabrics, of durable materials, together with their crania and skeletons, we know how they looked and how they lived, their degree of intelligence, their social condition, and the progress they had made towards a better and higher manner of existence. We know also that though they all were red Indians they differed widely in physical and mental characteristics, in habits and customs, methods of life, and in their local regulations and ethics. They differed vastly in culture, and in capacity for improvement—from wild nomads to sedentary agriculturists. But none were fully reclaimed from savagery, and the most advanced had only reached the germs of civilization.

With all of this knowledge of our predecessors there remains yet very much to be learned to complete their history. From whence came they? If of exotic origin, how and when did they get here? Were they

red Indians prior to becoming the American race? Are we certain they were not true Autochthons? These are the problems now engaging the ablest intellects of the world; and this magazine, awaiting their solution—which science will surely reveal in the fulness of time—will be among the first to herald abroad every new discovery and deduction portending this final revelation.

For several years Mr. Clarence B. Moore, one of the most reliable and persevering of American archaeologists, has passed from four to seven months of each year, with a force of laborers and at great expense, in the investigation of the prehistoric antiquities of Florida. He has thoroughly explored many of the sand mounds in the interior, and the mounds of sand and marine shells on the western and eastern coast of the peninsula, and on the eastern seaboard of Georgia. Before the late Dr. Jeffries Wyman drew attention to the fresh water shell heaps on the St. John's river, in 1868, comparatively nothing was known of them by our archaeologists. Mr. Moore commenced work on these huge accumulations of river shells where Dr. Wyman had barely begun it, and continued it from Whetstone Point nine miles above Palatka, to Lake Washington up in the expansive marshes, a distance of three hundred miles by tortuous course of the river, examining in that territory over sixty of those strange elevations, some of them of enormous dimensions, from ten to over thirty feet in height with bases covering from five to thirty-five acres.

The detailed reports of Mr. Moore's stupendous investigations, very finely printed and richly illustrated, are incorporated chiefly in Vols. X and XI of the Journal of the Philadelphia Academy of Natural Sciences, and are accompanied with a monograph on the "Earthenware of Florida," by Prof. W. H. Holmes, and an elaborate treatise on the "Crania from the Mounds on St. John's River," with many full sized plates, by Harrison Allen, M. D.

In the limited space at our command in this number we can give our readers not even an outline of the extent and great val-

ue to science of Mr. Moore's researches in this peculiar portion of our country. The day may come when grand reports of new and startling discoveries, such as these of Mr. Moore's, can be published at nominal prices so as to place them in the reach of all classes; but at present the large expense of their printing and engraving limits their numbers and their distribution to a few institutions and libraries. One of the principal aims of this journal is to popularize Anthropological Science; to tell the people in our plain way what the great thinkers and workers in this branch of learning are doing for its advancement and for extension of the knowledge of mankind among men. Acting upon this theory we will endeavor from time to time to acquaint our readers with the highly interesting antiquities of Florida brought to light by Mr. Moore's protracted labors, and particularly with his conclusions regarding the primitive authors of those antiquities.

The Arizona Educator is a sprightly and well conducted monthly magazine published at Jerome, Arizona, by A. E. Joscelyn, for the paltry sum of 75 cents for twelve numbers. As indicated by its title, it is actively devoted to the cause of education, at the same time paying due attention to current news and general information. It has recently added a department of Archaeology to its pages, edited by Dr. Miller, President of the Arizona Antiquarian Association, which will add very much to its usefulness and value. We reprint from the Educator, in this issue, an interesting description of a curious geological freak, on Beaver creek, in Arizona, locally known as Montezuma's Well, written by Dr. Miller, who contributed for the September number of this journal a report of the Montezuma Castle repair expedition that attracted wide spread attention.

The papers recently appearing in The Antiquarian on Survivals of the Stone Age and the Digger Indians are valuable records of personal observations by men who actually saw what they relate. Such testimony as this, descriptive of aborigines on this continent who relied on implements

and utensils of stone in their domestic life—a thing now well nigh of the past—by such witnesses as Hon. D. R. Leeper, F. C. Porter and Horatio N. Rust, is indeed worth perpetuating. Facts of this character from the experience of living men outweigh all theorizing, and tend to simplify the motives and methods of beastly savages who because of the ignorance of them, we are too apt to enshroud in a haze of mystery.

Gen. Gates P. Thurston, author of *The Antiquities of Tennessee*, besides his prominence as an authority in archaeology, numismatics, literature and history, is one of the most industrious and successful collectors of rare objects in our country. In his palatial home, near the state capital at Nashville, he has four extensive and very valuable collections; one of American prehistoric antiquities; another of coins and medals; a third of autographs and rare documents; and a superb cabinet of gems and precious stones. Each comprises many specimens that cannot be duplicated or surpassed. With these treasures, as a fitting complement, is a noble library, and many art works on canvas and in marble that would be a credit to any of our public galleries.

All of this has been accomplished—as was his book-writing—in the intervals of active daily pursuits, by a scholar but little past the meridian of life, whose success is a marked illustration of what American genius can do when coupled with thorough business habits and energy.

The managers of the Nashville Exposition were fortunate in gaining Gen. Thurston's consent to accept the superintendency of their art department, as much of the attractiveness of that exhibit is due to loans from his own collections, and his efficient administration of it.

J. F. S.

Dr. George A. Dorsey, Anthropologist, at the Field Columbian Museum, Chicago, has been called upon for expert testimony in an important murder case. His testimony regards the identification of human bones found in a sausage vat. The application of anthropologic knowledge to such business affairs will surely bring the profession to be recognized as one of practical importance.

Mr. Marshall H. Saville, assistant curator of Anthropology of the American Museum of Natural History of New York, left this month for Mexico, where he will conduct explorations for the museum. Mr. Saville has made several trips to Mexico in order to get a concession from the Mexican government allowing the American Museum to explore in Mexico and remove from the country such antiquities as may be discovered by their expeditions. This concession was granted to him. Previous to this it was against the Mexican law to remove antiquities from the country, and such as were brought out were subject to confiscation.

Mr. Saville is one of the few students of Ancient Mexican codices and glyphs, and an expert specialist on Mexicana. We may expect his expedition this winter will be fruitful and lead to the continuation of the work in each following season.

Dr. Edward Seler and wife have recently returned from an extended exploration in Mexico. Dr. Seler is curator of American Antiquities in the Museum at Berlin, and is one of our best authorities on Mexicana.

Messrs. B. T. B. Hyde and Frederick E. Hyde, Jr., have an expedition exploring the ruins among the ancient cliff dwellings and pueblos of the southwest. The results of their expeditions are given to the American Museum of Natural History. Mr. George H. Pepper leads the expedition. H. I. S.

In the Field,
Valley of the Fraser, B. C.,
Oct. 7, 1897.

Readers of the Antiquarian:

On the 28th of July I left an assistant in charge of the archaeological work at Lytton and began my trip to the mouth of the Skeena river, in northern B. C., where I expected to join Dr. Boas. On the way to Victoria, where one takes the steamer for the north, several shell heaps were seen, made of the shells and other refuse from ancient "oyster suppers and clam chowders." One of these was on the north bank of the Fraser river, at Hammond, the other on the north side of the eastern end of the arm of the sea upon which Vancouver is built.

At Vancouver Mr. Charles Hill-Taut has a private collection from the shell heaps of the vicinity, and Mrs. Webber has a collection from the heaps at Hammond. Opposite Vancouver is an Indian rancherie.

The trip from Vancouver to Victoria is delightful. The snow peak of Mount Baker, over 60 miles to the southeast, glistens in the sun and the boat takes one among wooded islands and in view of the snow-clad crests of the Olympic range, to the south of Washington.

At Victoria is the Provincial Museum, in which is a considerable archaeological and ethnological collection from the province as well as collections in other branches of natural history. A Songhese Indian village is located on the west side of Victoria harbor and in the streets one may see Haida, Kwakiutl and Salish Indians, Japs, Chinese, Jews, Scotchmen, Englishmen and Negroes. The place is an excellent one for ethnological study and in the vicinity are stone cairns, each covering a burial. Kitchen middens, or shell heaps, similar to those on the mainland, are also found.

On the steamer Danube, going north, was a crowd of gold hunters bound for the Klondike. They had with them 150 horses, boats in sections and freight until the steamer could take no more. The trip takes one through a channel among many islands, whose rocky sides rise abruptly from

the cold, clear water and are covered with virgin forests. They are truly the peaks of a drowned mountain range, projecting above the water.

Whales and seals sport in the waters and ravens and eagles fly overhead. The wonder is that more tourists in search of a summer's outing do not frequent this Norway of American and enjoy its cool, fresh air.

Passing Alert Bay one may see two totem poles still remaining and near Bella Bella are to be seen carved graveposts.

Reaching the Skeena river I found Dr. George A. Dorsey, assistant curator of anthropology of the Field Columbian Museum, just leaving with his party, which consisted of Mr. Allen, the photographer, and Mr. James Deans, of Victoria, who acted as guide and interpreter. Dr. Dorsey informed me that Dr. Boas had not yet arrived and told of his own visit to Skidegate and Nasset, Indian villages on Queen Charlotte's Island.

Individuals of many tribes congregate at the Skeena to trade. I began taking plaster Paris life masks of the natives, being able to secure casts of Haidas, Tsimjshian and Tlingit men and women. Of each individual cast, four photographs were taken, one full face, one of each profile and one of the right quarter. These are to be used by the sculptor in making the busts from the life masks. In a few days Dr. Boas joined me, having left Dr. Farrand in the Chilicotin country and Mr. George Hunt, at Bella Coola to carry on investigations among the people of those regions. We worked together some weeks before I left for Bella Bella. Dr. Boas devoted much time to securing copies of face paintings and tattoo marks and explanations of them and of various designs, paintings, carvings and copies of specimens in various museums.

At Bella Bella I secured a number of casts and photographs of faces and saw some of the old houses with carved houseposts still remaining. When I arrived at Bella Bella there was but one other white man in the village of many Indians. The Indians treated me most hospitably and seem to be a very cheerful people.

At Rivers Inlet Dr. Boas, George Hunt and myself again met and took casts and photographs of the natives, after which I came here. They remained to collect language and myths. At Rivers Inlet were seen four very good totem poles and a number of old houses made of huge slabs split from cedar.

The whole coast trip is one of wetness and leaves one's mind a nightmare memory of salmon. In August on the coast, one eats boiled, fried, smoked and dried salmon for breakfast, lunch and dinner.

Here we are near Hammond, on the banks of the Fraser, which is at this point slow, deep and wide in the low, alluvial land above the delta. Along the bank about a half mile extends a ridge 100 feet in width and five feet high, composed of shells, charcoal ashes and soil intermingled. In the refuse we find implements of bone and stone. Skeletons are frequently found but with none of these do we find objects. There are many of these shell heaps in this region. The winter rain will soon set in, when I shall return to New York to digest the summer's notes and examine in detail the specimens before undertaking next season's field work.

HARLAN I. SMITH.

Dr. A. F. Bandelier, the eminent explorer of Mexico and the southwest U. S., is still employed in exploration and research in Ancient Peru by the American Museum of Natural History. His work was formerly under the auspices of M. Henry Villard, who presented the results to the museum, but now the museum is continuing the work. During the past year his time has largely been devoted to preparation of a report regarding his explorations on the island of Lake Titicaco, which will be published by the museum.

H. I. S.

BOOK REVIEWS.

Observations on a Collection of Papuan Crania. By George A. Dorsey; with notes by Prof. W. H. Holmes. Chicago. 1897.

This publication is marked No. 21 of the Field Columbian Museum, and No. 1 of Vol. 2, of its Anthropological Series. It is a pamphlet of forty-eight pages profusely and well illustrated. The Crania described, 16 in number, of which 8 are of male and 7 of female adults, and one of a child, were obtained from a chief in New Guinea, where the curious custom of preserving human skulls as household embellishments prevails. These ghastly specimens are scrupulously clean and in perfect condition, having the jaws securely fastened together and the teeth tied in place with stout twine of palm fibre. Each skull is decorated with a separate design carved on the frontal bone, embodying some animal form, having reference probably to tribal history or totem.

Prof. Dorsey gives minute and exact descriptions of the skulls, their anatomical proportions, measurements and peculiarities; and Prof. Holmes, in his appended notes, figures and explains the odd engraving on each bony forehead; and tells us that these aesthetically ornamented objects are probably the crania both of enemies slain in battle or in savage forays, and of members of their own tribe also.

J. F. S.

The Gladwin Manuscripts—with an introduction and sketch of the conspiracy of Pontiac, by Charles Moore, Lansing, Michigan; Robert Smith Printing Company.

The Gladwin documents have been carefully collated and edited by Mr. Moore, and include a sketch of the noted historic conspiracy of the Indian chief, Pontiac, who, in 1763, attempted the capture of the British fort at Detroit, of which Major Gladwin was commandant. The book includes much of value bearing upon the history of Michigan, especially Detroit.

Aboriginal Indian remains in Jamaica. By J. E. Duerden, A. R. C. Sc., (Lond.), curator of the Museum of the Institute of Jamaica; with a "Note on the craniology of the Aborigines of Jamaica." By Professor A. C. Haddon, M. A., D. Sc.

This report, a reprint from the Journal of the Institute of Jamaica at Kingston, is the result of a request issued from the Museum of the Institute by its curator, which is explained in the introduction to the work. How ably the authors have treated the subject is made manifest upon an examination of the pamphlet, which contains fifty-two pages, eighteen figures, eight fine plates and a map of the island of Jamaica showing the distribution of the remains of the aborigines in scarlet dots, rectangular figures and the cross. The dot indicates the shell or refuse heaps; the parallelogram caves, and the cross rock carvings.

Very interesting is the first chapter which treats on shell and refuse heaps, and in which the writer tells his readers of the many fine objects found which resemble those taken from similar mounds on the coasts of the United States.

From a shell heap were taken twenty or more perforated chalcedony beads, shown on plate six, beautifully rounded and polished, with a number of pieces of partly worked stone and other beads unfinished.

Another mound disclosed at a depth of eighteen inches a small devitrified glass bottle, a figure of which is shown, indicating European influence, while the mass was being heaped up. In the remainder of the work are described burial caves, which were numerous with their contents, crania, stone flint and shell implements, pottery, stone and wooden images, rock carvings, pestles, mealing stones, etc. A few finely-wrought three-legged or tripod metates are also shown on plate four. These grinding stones were used in pulverizing maize and other cereals, and the author tells his readers that similar implements are used at the present time in Central America and also by the peasants in Jamaica. The authorities from whom the composers have quoted appear on the last page, and are of high standing. The production is indeed a valuable addition to the science of anthropology and reflects much credit on its authors.

A. F. B.

Report of field work carried on in the Muskingum, Scioto and Ohio valleys during the season of 1896 for the Ohio State Archaeological and Historical society.

By Warren King Moorehead, Columbus, O., 1897.

Ohio is far in advance of all other states of the Union in the efforts of its people to correctly ascertain and record for the future both its written and unwritten history. Its legislative appropriations in aid of this object have not exceeded those of other states, but her citizens, with uncommon zeal, have persevered in this work, and accomplished results entitling them to the highest praise. Particularly in the systematic and thorough investigations of its prehistoric remains does Ohio excel all other states. Tennessee, Georgia and the territory embraced within a radius of fifty miles of Cairo, Illinois, as rich as Ohio in aboriginal remains, have been in this regard, little more than hunting grounds of pillagers and hucksters. The extensive and admirable explorations by Squier and Davis, half a century ago, of the ancient Indian remains in Ohio, must fairly be considered the commencement of American archaeology, as a science, in America. From that time to the present learned and able men have almost continually prosecuted the study of Ohio's antiquities for the benefit of science and the enlargement of knowledge alone. Much of this work is now done under the auspices, and by the material aid of the State Archaeological and Historical society.

The above named report is a reprint from the fifth annual publication of that meritorious organization, and recounts the progress of last year's surveys. Prof. Moorehead, in charge of them, though yet a young man, has devoted half of his life to archaeological research in this, his native state; and by his untiring labors and personal observations, has made large and important contributions to the literature of its primitive history. Of these his account of discoveries made in the celebrated Hopewell group of mounds, now being published in this periodical, is, perhaps, the most valuable, though the archaeological map of Ohio, that he originated, and upon which he has expended years of patient work—the only state map of this kind yet undertaken in this country—must, when completed, take rank among our best achievements of progressive science.

His report of mound explorations and relics found during the summer of 1896 will well repay a careful perusal for the additional light it brings to bear upon the ways and means of primitive human life in Ohio.

J. F. S.

CORRESPONDENCE.

South Pasadena, Cal.

Editor of The Antiquarian:

Having just been quite successful in finding some prehistoric remains I am pleased to report the same, hoping some one can explain the use of the corrugated discoidal stone which I do not remember having seen described.

The ancient village site from which I took the articles mentioned below is situated on the southern edge or rim of the plateau upon which Pasadena is built. It is about six miles south of the base of the Sierra Madre mountains and overlooks the San Gabriel valley and South Pasadena. In grading a street these specimens were uncovered, but as there were no surface indication of a village site, no effort was made to uncover them carefully. I expected something might be found and called upon the graders, showing them such specimens as I hoped would be found.

The result was I found the following, viz.: One arrowhead, nine metates, 30 mealing stones used on the metataes; 25 hammer stones, most of which were cores or nuclei from which flakes had been broken off. All these hammer stones showed that they had been much used. One small quartzite core, which had not been used. Four smooth stones such as are used to day in making pottery. One small, flat stone with a depression 1-2 inches in center, may have been used in cracking nuts.

One very finely-wrought pendant or plummet, with a nicely-drilled hole near one end, 4 1-2 inches long, 1 inch in diameter. This I believe to be a charm stone used by the medicine men.

Three plain edge discoidal stones, 4 inches in diameter, 1 1-4 inches thick in center. Ten discoidal stones with corrugated edges, varying in size from 3 to 3 1-2 inches in diameter and 1 1-4 to 1 1-2 inches thick. They may be described as resembling a cogwheel with from 6 to 20 cogs, no two specimens being just alike. I hope some person may be able to tell us for what purposes were these used. I did not find any fragments even of pottery, nor have I seen any in this vicinity except very modern. Neither did I find a mortar or pestle or fragment of either and only one spear or arrow head. These specimens we found from two to three feet below the surface in a rich decomposed granite soil. One of the metataes was worn through at the bottom. All were rude speci-

mens. Query. How were these deposits covered so deeply? Are they more ancient than prehistoric remains generally? Does the absence of mortars indicate greater antiquity, and does the absence of pottery indicate that they had not acquired the art? I have examined 75 large village sites in this immediate vicinity and find the same class of implements in each, and rarely an arrowhead is found and not a fragment of pottery to my knowledge. I notice that with one exception all the metataes and some of the mealing stones have lost their smooth surfaces, and many are quite rough, I judge from natural disintegration. All specimens found were from 2 to 3 feet under the surface in a heavy granite soil, on a nearly level surface. Query. Why found so deep? I am inclined to believe that these people were the earliest occupants of the soil in this part of the country, and that these relics were lost in holes which were dug in the camp for ceremonial purposes and by children who dug them in their play. That these specimens fell into these holes which were gradually filled up. Besides this the natural leveling off of the earth's surface buried many specimens. I am anxious to learn for what purposes these corrugated discoidal stones were used. If found in other parts, I never having seen them outside Los Angeles county and only a few here. I offer as a suggestion that they may have been used as charm stones, symbolizing the sun and the moon, used by the medicine men or priests. I am anxious for information in this direction.

Hastily yours,
South Pasadena, Cal. H. N. RUST.

A FRIEND OF SQUIRE AND DAVIS.

144 Bucua Vista Avenue, Yonkers, N. Y.

Sept. 16, 1897.

Editor of The Antiquarian:

Dear Sir: Enclosed please find postoffice order for \$1.50 for my last year's subscription to your paper. Having been sick for eight months I did not see your "Antiquarian." I am looking over the numbers now which have been "laying" in my studio, 51 West Tenth street, N. Y. I subscribed to encourage the study of American archaeology. The arrow and spear heads and axes were very thick in Jefferson county, Ohio, where I was born 73 years ago. On the Mingo bottom were two Indian villages stood, cartloads of flint and stone implements have been gathered. That part of your journal, therefore, has no interest for me.

I knew E. G. Squire and Mr. E. H. Davis well. I modeled the "serpent mound" of Adams county and the "alligator mound" near Granville for them in 1876. These models are now

in "The Smithsonian" at Washington. I have seen all the great collections of Indian relics in this country. George Catlin I knew well. In my judgment the Peabody collection at Harvard University is the best large collection, and Valentine's collection in Richmond, Va., is the best small one I know of.

I have seen all the great mounds on this continent. "Monks Mound," 12 miles east of St. Louis, is the greatest. The most disastrous blow ever American archaeology received, was the sale of the Squire & Davis collection and George Catlin's collection. They are both in England and could not be bought now for \$100,000! This government is to be blamed for letting these valuable collections go out of the country.

It was the intention once of the archaeologists of Europe to send a very large commission to this country to report back to the big societies over there, but I guess it was given up. How would it be for you to excite the subject again? There is no question but American archaeology would prove as interesting to the world as that of Europe. I will try to call on you at Columbus in October. I have been in Columbus but once since 1841. Yours respectfully,

WILSON MACDONALD, Sculptor.

Nashville, O., Sept. 16, 1897.

Editor of The Antiquarian:

I have an arrow point similar to that of Mr. Coover's, figured on page 251 of September Antiquarian, which I found along the Mohican river. My father has two of the same kind. Why they were made in that shape I do not know. I would like to have some one answer through the Antiquarian. W. B. HUGHES.

Mr. A. B. Coover's figure of an arrow-shaped knife from Ohio is that of a form not rare in New York. The outlines may vary, but the flat and the ridged side at once distinguish them from arrow points. One in my hand at the present moment is somewhat curved longitudinally, but the section has the features of Mr. Coover's figure. They would probably occur in Ohio. Mr. Thomas Harper's scraper, Fig. 4, occurs in New York, and his Fig. 3 in Canada. I have not seen the latter here. Mr. Dilg's scrapers are frequent in New York, but not of white flint.

W. M. BEAUCHAMP.

Baldwinsville, N. Y., Sept. 15, 1897.

STONE AXES FROM THE BOTTOM OF THE HUDSON RIVER.

Editor of the Antiquarian:

On the west side of the Hudson river, at West Troy, the city has lately put in operation a steam dredging pump for the purpose of deepening the channel at that point. The matter is discharged through a 12-inch pipe into an old outlet of the Mohawk, a few yards from the

shore. It occurred to me that possibly some relics might come to light during the process. Consequently I visited the place last Friday and collected from amid the pebbles comprising the dredged-up matter, four notched stone axes, one of them of large size, one small creased axe, one polished stone hatchet or celt, these probably having been used in cutting holes in the ice, for fishing purposes. One large flint implement of the paleolithic type, and an even dozen of sein sinkers, the same being sandstone and quartz pebbles and blocks, notched on both sides and weighing from 12 ounces to 8 pounds. There was an entire absence of the small, flat notched pebbles commonly called net sinkers. All of these specimens are more or less water-worn, but perfectly distinct in their features of workmanship. Further explorations in the same field will be faithfully reported to the Antiquarian. Possibly this find may throw some light on the net-sinker problem.

O. C. AURINGER.

Troy, N. Y.

Lewisport, Ky., Aug. 8, 1897.

Editor of the Antiquarian:

Dear Sir: I opened a mound here last May, which was thirty feet in diameter and six feet high containing a large quantity of pottery (broken), arrow heads and celts.

The mound had evidently been a place of sacrifice, as in the center of it, on the base line was an altar composed of alternate layers of sand and clay about five feet in diameter and eighteen inches high, each layer being about two inches in depth, the top one burned very hard and strewn with some substance resembling burnt fat, a lot of charcoal and charred animal bones. On the west side of the altar lay two skeletons buried in a doubled or crouching position. On the east side three skeletons in the same position. With these skeletons was a quantity of broken pottery and arrow heads. At the north of the altar was a mass of ashes and other debris. At the south a quantity of bears' teeth and some flakes of mica. Directly beneath the altar with the feet to the southwest was a skeleton measuring five feet nine inches from the ankle joint (the bones of the feet being crumbled) to the top of the skull, and thirtytwo inches across the shoulders. Under the head was a lot of broken pottery and several flint tools, while near the right hand was a large and finely finished green stone celt nine inches in length. I managed to preserve about a third of the bones of this giant, vertebrae, skull thigh and arm bones.

I send you a map of the mounds and earthworks at this place. The mound I explored was No. 2, situated directly on the bank of the Ohio river. The most remarkable thing about this find is the position of the large skeleton directly beneath the altar. I expect to explore more of these mounds and will send you results.

Yours truly,

A. C. YEAGER.



A RARE ARCHAEOLOGICAL FIND MADE BY
A. B. COOVER AND L. M. BEAN, OF
ROXABELL, OHIO.

Near Bourneville, a small village situated on Paint Creek, twelve miles southwest of Chillicothe, Ohio, there are to be found numerous earth-works, the work of prehistoric man.

The valley abounds in mounds, forts (in circles and squares) and numerous village sites. On the farm of Mr. Ed Baum and Mr. Pollard Hill, lies a village site of about thirty acres in extent, which is rich in instruments of bone, made by an ancient race of people of whom we have no definite history, except as we unearth specimens of their work.

Prof. Moorehead and Dr. Loveberry, of the Ohio State Archaeological and Historical Society, were at work on this site some three or four months ago, and made a number of finds of bone instruments and broken pottery, all of which were shipped to Columbus by Prof. Moorehead for the Society.

A. B. Coover and L. M. Bean, of Roxabell, O., assisted by William Kerran, of Bourneville (each of whom have a private collection of ancient Indian and Mound Builders' relics) having obtained permission from Mr. Baum to make a number of excavations on his farm, camped on the farm of Mr. Hill near by, prepared to stay a week or more, and to give the ground a search.

The first pit dug extended over a space of 8x18 feet and 2 feet deep, the work being done with trowels. It took two days to examine that amount of ground.

From this excavation were taken several awls made of bone, arrow points of bone and

stone, bone beads, scrapers made from the leg bones of deer, a bone ornament about three inches long, a part of which is missing, and hundreds of pieces of pottery and animal bones.

Bones and pottery getting scarce in pit No. 1, another pit was started about 120 feet to the north, and at the depth of 18 inches from the surface a number of creek boulders were struck, and upon closer examination were found to have been arranged in a systematic order, in the shape of a small oblong mound 18 inches wide and 30 inches long. The dirt was carefully removed from the stones, and a photograph of the pile taken. In removing the stones a count was kept and there were found to be 66 boulders the size of a man's fist. The stones had been arched over a bed of ashes about twelve inches thick, and contained a number of animal bones, and near the center of the ashes lay a polished stone 4 1-4 inches long, 3 1-2 inches wide and 1 1-2 inches thick. On one side was carved a human eye, below the eye an excellent image of a turtle; at the lower right hand corner a fox or wolf; to the left, zig-zag marks with dots; under all runs a line the full extent of the stone. The reverse side is plain and the stone shows the marks of having been exposed to intense heat. The mound or arch lay the longest way, due north and south.

About five feet to the south were unearthed the skulls of two deer, a bear, and what was taken to be a buffalo and moose. The five skulls lay in a quarter circle, and each facing the mound of stones, as if for some special purpose. Near the mound and the skulls were found perforated mussel shells, bone awls, one bone celt, one perfect bone fishhook, one piece of stone pipe, bone beads and count-

less pieces of pottery and animal bones which were broken. Sixty feet to the south of the arch of boulders were unearthed two skeletons of men of average height. Both skeletons lay on their backs with their heads to the north. One lay at the depth of only 10 inches from the surface, the other being at the depth of 2 feet, and appeared to have been encased in black walnut, large pieces of which were taken from around it in a charred state, having, like most every thing else found at this place, been subjected to the action of fire. Near the skeletons were found a number of bone beads, shell hoes, bone awls, several flint points and scrapers, large polished teeth and quite a lot of broken ornamented pottery. It was estimated that about ten thousand pieces of animal, bird and fish bones, and three thousand pieces of broken pottery were unearthed in the five days' work.

A. B. COOVER.

Roxabell, O.

ANTIQUITIES OF FOX RIVER, WISCONSIN.

Editor of The Antiquarian:

(For eighteen years my home was in the midst of the region I have attempted to describe, and I was led to write this brief article, hoping that more students of archaeology would have their attention drawn to what I consider one of the most valuable relic fields in the great north-west.

(Mr. Perkins, the owner of the collection referred to in my paper, formerly lived in Wilmington, Wis., and may still reside there, but I cannot say for sure because I have not seen the gentleman for eight years. So far as I know we are not related, the similarity in names being merely a coincidence.)

If you will look upon the map of the state of Wisconsin you will observe at a glance that the Fox river is the connecting link in the Mississippi water course between the great lakes and the Gulf of Mexico.

This stream, after following a very irregular course in a northeasterly direction, empties into Green Bay. At Portage, the Fox and the Wisconsin rivers are separated by only a few rods of lowland, still the latter stream flows southwest and at Prairie du Chien unites with the "Father of Waters."

So it will require no argument to convince one of the commercial value of the Fox river in prehistoric times, as well as at present. During the days of French conquests in the west, Father Marquette, La Salle and many other noted missionaries and explorers passed down this stream en route from Green Bay and Sault de Ste. Marie to points along the Mississippi, and it has not been long since the Indians prized the Fox as a means of communication with tribes located to the north and south.

The best evidences of the prehistoric occupancy of the Fox River Valley by the Mound Builders are doubtless to be found in Marquette county. Hundreds of burial mounds are irregularly distributed on both sides of the stream,

though the region is particularly rich in mounds of the "effigy" type. These usually occur in groups of three to twenty, and are designed to represent birds, serpents and turtles. Some of these mounds are of great length and vary in height from one to five feet.

Perhaps the choicest group of all—the number of mounds comprising it approximating sixteen—is situated on the south bank of Buffalo Lake, about a mile west of Montello. The tumuli are at present covered with a heavy growth of oak, and are in a perfect state of preservation, but unless local authorities bestir themselves to protect these valuable monuments, the plow-share will soon level them.

Although stone implements in great numbers have been found all along the river course, copper relics, until quite recently, were particularly plentiful as compared with their occurrence in other localities. This was doubtless attributable to the fact that the Superior copper mines were readily accessible to the people living upon this direct waterway.

Many of the finest private collections in the state of Wisconsin contain choice implements and ornaments of copper from this locality. The region has for some years been noted for its wealth of copper relics buried in the sands, and as a result of the annual visits of archaeologists and "curio" hunters "surface" finds are almost a thing of the past.

The "Perkins" collection of copper implements now on exhibition in the State Historical rooms at Madison, Wisconsin, contains in all probably the best assortment of any private collection in the country. Mr. Perkins secured a number of his best specimens in the valley of the Fox.

It is an ideal field for the investigation of the antiquarian.

EDWIN L. PERKINS.

Souix Falls, S. D.

Bellefontaine, O., Aug. 30.—On Monday five human skeletons were unearthed while excavating was in progress on the farm of Infirmary Director Harvey Young, west of the city. Elk entlers had been placed above the head of one of the groups of bones. The skeletons are supposed to be those of a number of persons killed by Indians early in the century.

Editor of The Antiquarian:

I send you some facts regarding an ancient rock picture, supposed to have been sculptured by the Indians on the Mahoning river, in Berlin township, Mahoning county, Ohio.

Having heard for the last ten years that the representation of an Indian was carved on a rock a little above the dam on the north side of the river, at Shilling's Mills; and that it was from four to five feet under water when the mill pond was full, we resolved to watch our chance and locate it when the water was drawn off. Such an opportunity presented itself about the middle of last August, when the water was let out for the purpose of repairing the dam. We then proceeded to the river with the necessary articles

for taking an impression of the picture with plaster and also with paint on muslin, one of the latter we enclose to you with this.

We found that this rock at the ordinary stage of water held back by the mill dam was wholly submerged, so that in consequence it has been the privilege of but few persons to see this work of art for the last seventytwo years, the dam having held the water over it all of that time excepting at rare intervals when repairs were necessary. This rock is a coarse sandstone, or grit, which overlies the coal measures, and is practically indestructable. It is a large fragment that was once part of the ledge or shelf projecting from the bank and was broken off and gradually slid down toward the bed of the stream until it is now well into its channel. In shape this detached rock is somewhat triangular, two of its sides measuring twenty feet, and the third side twentytwo feet long, and it is between four and five feet in thickness, and lies in the river at quite a slant.

The carving is done nearer the point of the great triangular surface and represents the figure of an Indian with a headdress of feathers and holding a gun by the muzzle end, in his left hand. It is a mere outline figure, fifteen inches in height, rudely done, the lines deeply cut with their edges now rounded by attrition of materials carried over it by the water currents, through, perhaps, ages of time. Mr. Shilling, now seventyfive years of age, and perhaps the oldest person in this vicinity, says that this rock with its quaint engraving, has been in its present position from his earliest recollection, and thinks it has been there, as now, from the earliest historic times. He tells us that it has always been supposed to be the work of Indians. The carving bears evidence of great age, the cuts being colored a dark reddish brown shade, similar to the surface of the rock. So far as we can learn it has never before been described or mentioned in print. On the angle of the stone below the Indian figure appear the letters P. W., which have a fresher look than the picture and perhaps have been added at some later time.

This place is undoubtedly prehistoric Indian territory. A little distance from the effigy is a stone mound, not yet explored, and to the east and south along the river are very extensive ancient village sites of the aborigines, which have yielded many relics of the stone age.

As to who or what this sculpture was made to represent we cannot venture an opinion, but leave the answer to some one who is better posted than we are. We merely present you the facts as they are, hoping that they may prove of interest to some of your readers.

Diamond, Ohio.

A. H. DAVIS.

[Acknowledging our gratitude to Mr. Davis for his interesting paper and the muslin squeeze of the outline Indian figure accompanying it, we will state that it was impracticable to reproduce the drawing, as an illustration, in our pages because of its obscene details. This carving is

obviously not of prehistoric age, as the effigy is shown holding a gun in his hand, proving adoption of European weapons. In all the narrative, historic or mnemonic pictographs on stone by the North American Indians, so far observed, indecent or obscene details are very rarely, if ever, seen. This fact, taken in connection with the gun, the head feathers drooping on each side, the grossness of conception and execution and the letters carved beneath, combine to give the picture an un-Indian look, and incite the suspicion that it is very probably the work of an idle white boy of the early pioneer days of that region.—Editor.]

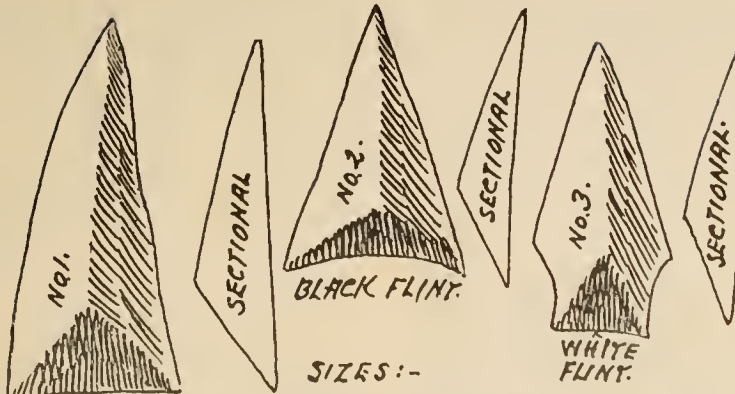
Editor of The Antiquarian:

To answer the inquiry of Mr. A. B. Coover, of Roxabel, Ohio, in the September number, I submit the accompanying drawing of a few of many similar flint points found by Dr. E. H. Smith, of Austin, at the places mentioned. The doctor claims that flint arrow points of this class are quite plentiful in the Mercer county region of Maryland, and also about the falls of the Ohio side in the vicinity of New Albany and Jeffersonville, Indiana. By way of a suggestion, I would mention the fact that a peculiarly shaped pipe was found in our state, having the form of a human head, the face of which was marked with the figures of the tattoo art and which again reminded one of the strange markings of the faces of the Carribean Indians of the West India Islands as described and pictured by the early Spanish explorers. Any amount of conjectures are permissible in the premises, and if taken in connection with the traditions of the Shawnee Indians, who claim to have come from a distance over a great sea, and who also resided in the southern portion of our state (Illinois), we might claim that the Indians of the Carribean Sea and its islands, to which the country of Chiriqui adjoins, or a colony of them at least, crossed over into Florida and thence gradually worked to the northward by invasion and conquest or by expulsion. Many facts can be adduced in support of this hypothesis.

George Catlin entertained the opinion that a branch of the Shawnees, in after years, appeared as Mandan Indians, and that these, in former years, held intercourse with a people of Welsh origin—the latter idea is suggestive that the Shawnees in a changed form advanced also north along the Atlantic seaboard, which fact, if fact it is, accounts for these peculiar arrow points being also found in the Maryland region. Yet I am of the opinion that Dr. Thomas Wilson's statement of these flint points being peculiar to the Chiriqui region of Central America is a truthful statement. Colonies from the home country may have carried them to the islands of the Carribean Sea and thence northward into Florida. The unwritten history of ancient America must needs be studied from various standpoints, traditions and myths included.

CHARLES A. DILG.

Chicago, Ill.



BLACK FLINT. No. 1. 1 X 2 INCHES. SECTIONAL - 1/2 INCH.
 No. 2. 1 X 1 3/8 INCHES. SECTIONAL - 1/4 INCH.
WHITE FLINT. No. 3. 1/2 X 3/4 X 1 1/2 INCHES. SECTIONAL. 1/4 INCH.

WHERE FOUND:- NOS. 1 & 3 NEW ALBANY, IND. OPPOSITE OHIO FALLS.
 No. 2. MERCER CO. MARYLAND.
 ALL IN THE DR. SMITH COLLECTION -
 AUSTIN - CHICAGO, ILLS.

P. S. Mr. Editor: The suggestion you offered in your learned comment on my communication in the September number of The Antiquarian, that the stratum of white flint I described as occurring in the cut through the Drift, on the Sheridan road at Highland Park, might be an importation from Flint Ridge, in Ohio, cannot be accepted in explanation of all the facts in this case. The formation here, as shown by Mr. Frank Leverett, of the U. S. Geological Survey, in his "Pleistocene Features and Deposits of the Chicago Area," is a series of glacial moraines, and all through it occasionally occur these beds of flint, splintered and shattered by the crushing pressure of glacial action. The chert beds of the Chicago clays are also drift deposits, and from these ready stores of raw material the early Indians here—as well as those more recent—found abundant supply for the manufacturing of their implements and weapons without having to import it from Flint Ridge or elsewhere. Waterworn pebbles of these silicious rocks that line our lake shore frequently assume the forms of celts, hammers, spear heads, etc., by attrition, and would require but little artificial modification to transform them into finished implements. As I have before stated, almost all of the stone relics of stone age Indians found in this region are made of the white flint and chert occurring here in our glacial drift. Implements made of stone foreign to this locality, are found here too, but are easily distinguished from the home production.

C. A. D.

"DIGGER" IS A MISNOMER

The contention of General Bidwell of California, as set forth by Mr. Leeper in the Antiquarian for October, that the Indians of California are erroneously called "Diggers," or "Root Diggers," is, in my mind correct. Doctor Edwin Bryant, in "What I Saw in California," is responsible for my error in applying to them that name; and doubtless this was the case with many others who went there in 1849; as he was very generally read by most of us. So we were already prepared with an appellation for our red brother without a formal introduction.

I don't concur in the opinion, however, that the appellation degrades the numerous bands of Indians I met with in California, for all the tribes, or parts of tribes, it has been my fortune to meet with, who are genuine Root Diggers are their superiors in nearly all respects. I don't think there are any esculent roots or bulbs indigenous to California. But in Idaho, Washington, Oregon, Montana and Utah there are in certain districts roots succulent and healthful, called by the Indians (and whites as well) "cammas." I have tried to look it up in Encyclopedias and Lexicons, and find its orthography to be diversified thus; Cammas, Camass, Johnson's Universal Cyclopaedia tells us "Cammacia or Cammas (so pronounced by the natives) is "an esculent, used as food by the native Indians in the northwest; and grows in marshy land." I have not quoted him verbatim, but have given the substance, and will offer a word of correction. I have never seen it growing in a marsh; neither have

I seen it on a mountain top; but invariably in prairie land with a substantial grass sod. In Idaho there are two localities with sufficient quantities of cammas to give names to the local territories. "Little Cammas prairie" is in Alturas county, and "Big Cammas prairie" is in Nez Perces county. One in the eastern part of Idaho; the other in the northwestern part. Cammas is almost equal to an inferior sweet potato and makes an excellent food for swine. Hogs are driven onto such range where practicable.

The Nez Perces, Bannocks, Shoshones and Piutes are all Root Diggers, and are all, except the Piutes, greatly superior to the California Indians. Chief Joseph's band of Nez Perces that gave the government so much trouble by their contention for the Wallowa Valley are, or were, Root Diggers. They are now on a reservation. Joseph, with his band of seventy-five warriors, made a successful retreat before General Howard's troops in 1877 from the Wallowa Valley to the Bear Paw Mountains in Montana, a distance of six or seven hundred miles, and would have made his escape across the Canadian border had he not been intercepted by General Miles, to whom he surrendered after a battle of short duration. It was a most masterly retreat taking into consideration the fact that he carried with him all his squaws, their children and baggage; and six or seven hundred horses, and foraged on the country he passed through.

Although we are in the habit of using it, as an opprobrious epithet, "Root Digger" legitimately belongs to several tribes higher in the scale of being than the California Indians. Nevertheless it is a misnomer as applied to them, and should be corrected. I know of no esculent root, indigenous to the northwest, except "Cammass," and conclude its use has originated the name of "Root Digger."

Mt. Pleasant, Iowa. FRANCIS C. PORTER.

A correspondent asks for the name of the author, or title of the poem he wrote containing the following beautiful lines:

"And did the dust
Of these fair solitudes once stir with life
And burn with passion. Let the mighty
mounds
That overlook the rivers, or that rise
In the dim forests crowded with old oaks
Answer."

This quotation occurred in a series of articles that appeared recently in *The Forest and Stream*, but the writer of them, when asked, did not know the author and could not remember where he found the lines he quoted. We will be pleased if any of our readers will send us the information asked for.

Madison, Wis., Sept. 14, 1897.

Editor of the Antiquarian, Columbus, Ohio:

Dear Sir: As having some slight bearing on the inquiry of Mr. A. B. Coover in the Antiquarian for September, I would state that I have

an arrow point somewhat similar to the one he describes, and of which I enclose herewith a rough outline drawing. It is one I found myself upon a field near this city where hundreds of points have been picked up. It is of rough workmanship, and by no means handsome in appearance.

Like Mr. Coover I am but an amateur in the field, and do not pretend to speak with authority upon the subject, but I have never doubted for a moment that this arrow point was made in this country.

Yours truly,
W. W. GILMAN.

George O. Greene, Princeton, Ill., writes and sends photograph of the largest spear-head found in his county. It is 12 1-2 inches long. The arrow and spear-heads in his section are made of many varieties of flint and chert.

NOTES AND NEWS.

The Smithsonian Institution has received a collection which is of importance to the archaeologist. It is known as the Seton-Karr contribution, having been discovered by this Englishman in Somaliland, on the eastern coast of Africa. The implements were purchased from their discoverer by the Smithsonian Institution. There are about fifty pieces in the collection, made of flint, and ranging in size from an inch or so in length to half a foot, some weighing several pounds. The objects are supposed to be spear heads, battle-axes or wedges, truncheons, bludgeons, or whatever they may be termed.

The discoverer had this to say on the subject of his find and the locality where the objects were unearthed: "Certain landmarks as to the four rivers mentioned in Genesis led me to think that the Garden of Eden, if it ever existed, may have been here, and that those very tools have been made and used by Adam and his numerous descendants. At any rate, my discoveries in Egypt and in Somaliland led me to the idea that man's original home, or the place where he was gradually evolved, must have been in Africa, or, at least, in a tropical land, where clothes were unnecessary and food plentiful to hand."

A RARE RELIC FOUND.

Hon. D. R. Leeper has come into possession of something never before seen in this locality. It is a broken deer antler with three remaining prongs and was found Friday south of this city by Will Gorney, who secured it in the bed of a creek on O. D. Rupel's farm while fishing for minnows. The peculiar thing about the antler is that through the main part of it, the point protruding on one side and the head on the other, is an Indian arrow head of flint firmly imbedded and the point scarcely affected by the terrible force with which it struck the antler. It is a very highly prized relic indeed.

South Bend (Ind.) Daily Times.

THE ANTIQUARIAN.

EDITORIAL STAFF: DR. J. F. SNYDER, Editor-in-Chief, Virginia, Ill.; DR. CLARENCE LOVEBERRY, Columbus, O.; HARLAN I. SMITH, of American Museum Natural History, Associates.

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STATUS OF PRE-COLUMBIAN INDIANS.

[The two questions in the study of American aborigines most prominent at the present day are, 1st, their origin; and, 2d, their cultural condition when discovered.

The first of these problems has occupied, and perplexed, the minds of the ablest naturalists of the world since the day Columbus exhibited at the Court of Spain the first specimens of our Indians seen in Europe. That was over four hundred years ago; and no oracle has yet spoken the words necessary to solve that riddle; and science is still in vain beseeching the obdurate past for its solution.

The study and discussion of the second problem, namely: The status of the Indian's development when first observed, have only in the last few years engaged the serious attention of scientists. In the operation of natural law of progressive and progressing advance, Anthropology heretofore made no exception of the American Indian; but late investigators have concluded that he had, before the coming of Columbus, reached the culmination of his capabilities and was retrograding.

To stimulate interest in this obscure question, we have solicited the views of scientists who have given it thoughtful scrutiny; and, in this issue present a few of the courteous answers received, and in following numbers of this magazine, will give the opinions of others.—Editor.]

—:O:—

Editor of The Antiquarian:

"Were the North American Indians, at the period of their discovery still advancing to a higher and better condition of life?"

To answer this fully would require one to enter into that endless controversy: What is civilization? Compare the hunter who at an early day penetrated into the wilds of northern Georgia or South Carolina, and built his rude cabin near an Indian village, in which was one of the great mounds of that region—his only articles of use a bench or two, an iron pot, his hunter's knife and his gun, clothed perhaps in deerskin, yet able with charcoal to write his name on his wall and carve that of a friend on a tree—with the most advanced Indian—compare him with the Indian chief whose house is perched on the pyramid; who, clothed in his dress of tanned deerskin ornamented with gay colors and heavy fringe, his arms and ankles encircled with copper bracelets, with head-dress of gay plumes, his neck encircled with a triple strand of pearls on which hangs a shell-disk carved with strange figures—stands amidst a host of followers similarly adorned. Which of the two will be considered as the more civilized, the more advanced in mental and material condition?

A reply to your inquiry must vary more or less according to locality. There are evidences, some of which cannot be questioned, that in certain sections of the mound region the building of the more elaborate earth-works had ceased, at least to a large degree, and simpler, ordinary mounds only were constructed. This appears to have been true in Wisconsin and Ohio, while the mound builders of the Gulf States seem to have been in their zenith at the time De Soto entered their country.

In Yucatan the golden age which produced the magnificent structures now scattered as ruins over that region appears to have come to an end about a century before the entry of the Spaniards. The great con-

federacy was broken into fragments at the fall of Mayapan, its capital, something like eighty or a hundred years before the Spanish conquest. On the other hand Mexico was in the zenith of its glory when Cortez landed on the coast. Whether the Mayas of Yucatan would have advanced nearer to complete civilization, if they had been left undisturbed, or would have remained for a long time in a retrograde condition, no one knows.

That the Indians of North America had advanced from a lower to a higher condition in many sections is undoubtedly true. That the most savage and those of the lowest culture condition had acquired some new art, some additional implement or ornament, is admitted. But it is also true that in a number of sections at the time of discovery the people appeared to be in a retrograde condition, in some respects at least. Such was the condition of quite a number of tribes in the northern half of the United States.

CYRUS THOMAS.

U. S. Bureau of Ethnology, Washington City, D. C.

—:O:—

Editor of The Antiquarian:

There is no greater error than that of believing the Mound Builders to have been technically superior to the modern or post Columbian Indians. They were not.

Secondly, this opinion is consistent with the other ones, to wit, that the law of human progress is irresistible and that social and technical paresis and degradation are a part of the onward movement.

As regards the Mound Builders it does appear to me that some profound change had come over them prior to the discovery. It is a fact that bones of the buffalo are not found in mounds. To account for this Shaler supposes that the invasion of the buffalo was the occasion of changing from sedentary to hunter mode of life. I am not sure of this, but from a long study of technical processes I am convinced that in the Indian tribes, especially of the South, we have their immediate descendants. The technical skill of the Mound Builders was

not the highest. Their art remains that could not be trifled with by designing persons are mediocre. The textiles, all of them, are very poor. Their pottery does not for a moment enter into comparison with that of the Southwest. Carvings in wood and stone do not equal in skill or design those of the West or South. Whatever of their work attained special excellence shows foreign motives such as etching on shell and manipulation of copper.

With regard to the "works" themselves, it is a charming proof of human versatility, and of the young, plastic nature of the American race especially, that in each area of characterization the mind and hand of the man played skilfully on the material—snow, cedar, earth, skin, loose rock, clay or adobe, sculpturable rock, and so on. Who shall say that a pyramid mound is ahead of a snow dome, a cedar communal house with totem post, with stair lodge, with pile dwellings, with pueblo or stone temple? On the prairie the alphabet of architecture is in soil forms, in Mexico in stone forms, in British Columbia in wood forms, in the Arctic area in ivory forms. Any attempt to degrade the modern or historic Indians through their arts will fail.

O. T. MASON

U. S. National Museum, Washington City, D. C.

—:O:—

Editor of The Antiquarian:

The question you ask cannot be answered by one sweeping generalization. It must be separately asked and answered for each of the many tribes on our continent. That some tribes "had reached their zenith" and were going down may be true. A tribe may, however, have passed its culmination as regards one matter of culture and still be making progress as regards others. A complete knowledge of all details and a careful balancing of them would be necessary in order to answer the question for any tribe. "The Mound Builders of the Mississippi Valley" were not an ethnic myth. If the stone-grave people of Tennessee were, as Dr. Thomas claims, Shawnees, it appears that in certain arts, they were going backward.

FREDERICK STARR.

University of Chicago.

The Cultural Status of Certain North American Aborigines at the Time of Columbus.

The Antiquarian asks whether the native North American peoples had or had not passed into a cultural decline at the time of their discovery, to which question I would say, first, that I do not thus far see my way to a summing up of the cultural status of all the pre-Columbian American communities. As far as my researches go I must speak only of districts.

Concerning the region north of Maryland and east of the Alleghenies, I see no reason anywhere to suppose that the natives had passed the zenith of their culture, or were in a decadent state, when encountered by the first white explorers. Nothing found at any of the village sites, nothing in the shell heaps of Maine, New Jersey or Maryland contradicts this estimate which is further established by culture layers examined by me in the Delaware valley, where the best stone work lies on top.

On the other hand the culture layer representing the southern appalachian region appears to me to dwindle away towards the top. Such seemed to be the meaning of the floor refuse in Lookout Cave at Chattanooga, a deposit, which for reasons to be described later,* I regard as an important chronicle for man's antiquity in the valley of the Tennessee and the southern mountain region.

This interesting floor refuse, the whole of which I removed for a distance of fifty feet from the entrance, appeared to grow richer and more varied in its contents slightly below the top level of Indian occupancy.

* The full record of the investigation of this cavern, in which the remains of the mylodon and tapir were found, with a series of other animal bones identified by Professor Cope, and fossil shells, fixing a reasonable chronology for the human refuse buried with them, remains to be published, probably during the coming winter.

In like manner, as far as the Ohio valley is concerned, the general notion of decadence at about the time of the discovery, the prevalent belief of a dispersion of Mound Building tribes by more barbarous enemies, was not anywhere controverted, but rather suggested by the cave layers studied by me in West Virginia, Illinois and Kentucky which bore upon the subject. Allowing for the absence of caves along the main stream, Thompson's Shelter higher up the valley, and in the line of mounds, seemed, like the Lookout cave, to show a thinning out near the top, and just before the white man appeared. Similar evidence was presented by the rock shelter at Alton, Ind., where the owner prevented the completion of our work.

In Yucatan, where the research had been more complete, the testimony seemed clearer. The prevalent impression, sometimes doubtless exaggerated, of a falling away of a cultural status of the Mayas through internecine feuds at the time of the discovery, was sustained in the caves examined by us. The floor layers were richest just below the top.

Signs of steady advance along the north-eastern seaboard region of the United States, of decadence in the Ohio valley, to the southward and in Central America constitute the only original testimony which I am able to offer in answer to your question. In presenting these observations I again suggest that it has not appeared to me that research has yet proceeded far enough to present us with a perspective of the cultural status of all the aboriginal Americans.

Without giving up a belief in a wider evolution of barbarous into more civilized humanity, we may well admit that among many isolated communities like those in the new world many had lost step and fallen backward in the march. On the other hand, I would expect to see no sign of decline in many parts of the new world like Mexico. When archaeological research has progressed sufficiently to permit a widespread balance of losses against gains the true situation at the time of the discovery will be understood.

HENRY C. MERCER.

Indian House.

THE HOPEWELL GROUP.

WARREN KING MOOREHEAD.

(Continued.)

One of the best articles Rev. Stephen D. Peet ever wrote was entitled, "Village Life and the Mound-Builders' Cultus."* Several of his statements may be taken as applicable to the Hopewell Group.

"In the ancient villages of Ohio there seems to have been a separate enclosure for each of the classes, and for each especial purpose. The clan elders had their houses inside of the square enclosure, and the people had their lodges inside of the large circle; but the religious houses or round houses were located in a small circle adjoining the two, the burial places and dance grounds being placed in enclosures by themselves. Some of these villages in Ohio present evidence that there was a sacrificial place in the midst of the large enclosure, and human sacrifices were offered to the sun.

"The proximity of villages to one another and their location along the valleys of the streams show that the tribal system prevailed, and that the tribes took the rivers for their habitats, the villages being the abodes of the clans. The discovery of the central villages and works peculiar to themselves proves also that there were confederacies which combined the tribes. These filled the districts with the works devoted to defense, government and religion, as well as domestic life, and so gave great variety to the earth works."

I will agree entirely with Dr. Peet save on one or two points. It is impossible from field or other evidence to determine that the "clan elders" lived within the square. There is little surface evidence of lodges, and were the debris thick, how would we know who lived there?

His statement that the ceremonial floor for offerings, sacrifices or burials was surrounded by a wall is correct and well taken. (See map, Fig. 1, May Antiquarian). Although the effigy's embankment is semi-circular it may be a sun symbol.

Another sun symbol surrounds mound No. 12. The village within the large enclosure was probably occupied by all or nearly all of the people, irrespective of class. The difference in class or office among Americans is observed on certain occasions—not in an every-day communal life. Doctor Peet is aware of this.

That burials were near the village in a separate enclosure surrounding mounds and where veneration for the dead and protection from disturbance was vouchsafed, no one will deny. But they are also in mounds not surrounded by circles.

All of the villages of the middle and lower Scioto may have existed at the same time. Perhaps their inhabitants spoke a common language and were banded together for mutual protection. Certainly they had the same communal life and religion. The arts, commerce, etc., are exactly alike, and only differ in degrees of culture or extent. But whether they actually did exist at the same period we must determine later. While I am of that opinion, yet I cannot state it as a positive fact.

Let me theorize a moment. Admitting the valued possessions of the altars, the peculiar ceremonial figures and symbols, the interments of either important or highly venerated persons, why are not such conditions of burial found at other large sites in the Scioto Valley within 20 miles of Hopewell's? There is something remarkable in this fact to me. I believe Hopewell's to not only have represented the highest culture, but that it was the principal center or "head" of the entire Southern Ohio region. I believe that the explorations prove this statement.

Hopetown, Mound City, Harness', Bourneville, Cedar Banks and Circleville were communities much on the same order; mounds, circles, squares and enclosures being similarly placed. Hopewell's contained the chief traders or merchants, the greater shamans and chiefs. Supplies of copper, mica, shells, pearls, etc., came from Hopewell's. To it repaired the people of these other highly cultured towns to participate in religious or ceremonial rites. Upon the occasion of burials of great shamans or chiefs we can readily understand why other vil-

*American Antiquarian and Oriental Journal, Sept., 1892.

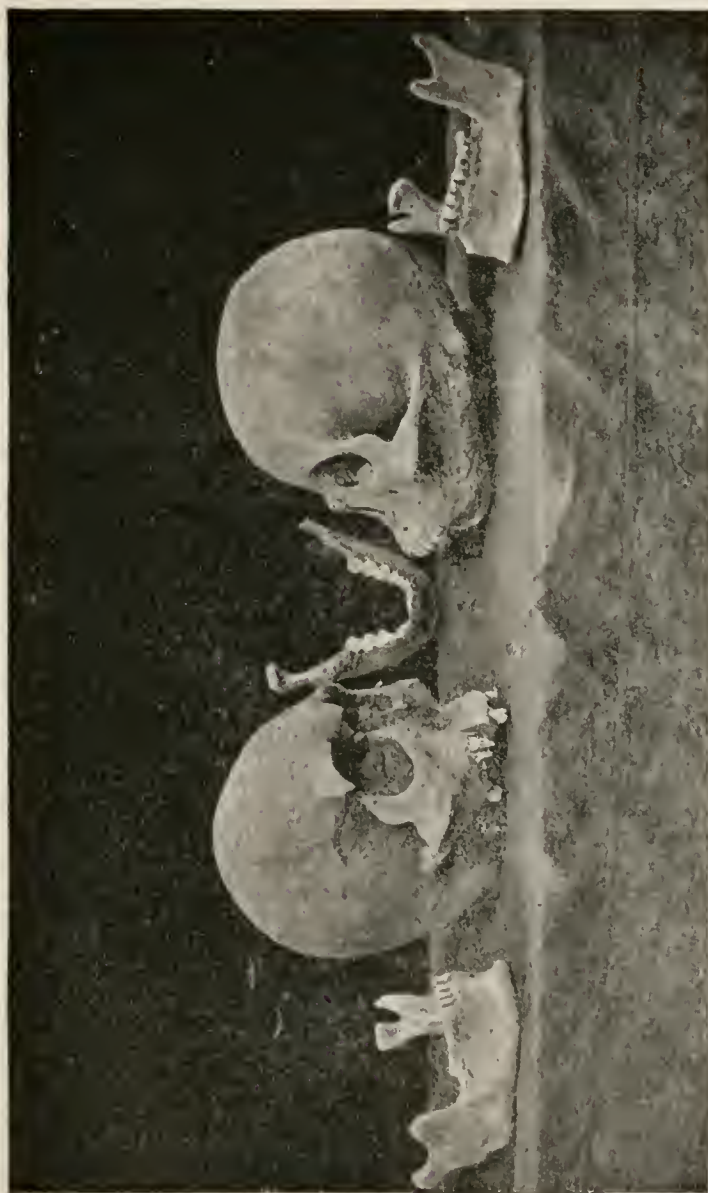


FIG. LXXV.—Crania from the Hopewell Group.



FIG. LVIII.—Perforated Humeri, etc. Hopewell Group.

lagers would desire to be present. No three skeletons (in the history of mound exploration) have ever been found comparable to Nos. 248, 260 and 261. From their head-dresses we may say they were priests. An offering of 68 copper axes would in itself constitute a wonderful gift—yet these are but a part of the sacrifice. It is, then, not reasonable to conclude that persons of the same or allied tribes—perhaps of the same secret order and certainly observing a common religion—would come together and assist in the ceremonies? Was not such an event unusual even among mound-building peoples? Well beaten trails may have extended from one town to another. Distances were short, runners could reach any of the large settlements in from 2 to 4 hours.

One cannot understand that the walls were any protection to the villagers, yet it appears that we can assign to them no other purpose. I have spoken of this puzzle in the May number, and to all students approached upon the subject it appears inexplicable. A gentleman well versed in military matters concurs with Doctor Wilson, and adds:

“The running of their embankment along the top of that high terrace to the rear (south) exposed to fire or assault the entire village.”

Reference has been made to the fine class of objects placed in the altars. I have alluded to their significance—but the point should be emphasized. Not only the rarity of the substances from which these artifacts were fashioned, but the beauty and skill evinced in their workmanship demands our attention. The peculiar graphite—slate rings illustrated in Squier and Davis' and the Smithsonian Reports—familiar to all readers, yet not dug up since the days of Squier and Davis—may well call for our admiration. How were they made and why? Their delicately worked rims and small perforations, seem to place them beyond the ability of barbaric man. The perforated quartz crystals, the quartz crystal arrow-heads and ornaments were a puzzle to everyone who examined the Hopewell material. Some quartz crystals were drilled lengthwise. In some instances the perforations were 1-8 to 1-12 of an



FIG. LXXI.—Various bone, shell, copper and mica objects from the Hopewell Group.

inch in diameter. Mr. McGuire can drill in stone and metal with aboriginal tools and his experiments in that direction are of great value.* But can he drill quartz crystals? I doubt it. Can any archaeologist explain how the perforations were made?

Some peculiar copper objects in the two altars of the Effigy deserve a few words. I cannot name them, nor do I know that descriptions or explanations have ever been offered by any person. From such fragments, three to five inches large, as were found, we concluded the specimens to have been six or eight inches long and four or five in width. They appeared like small cylinders, four or five joined together and filled with wood—possibly reeds—about two-thirds of an inch in diameter. What were they for?

Of the human effigies in bone but one was secured sufficiently preserved to show its facial characteristics, and even it is not perfect, for the back of the head is gone. There is nothing remarkable

about the face—just a plain sculpture. Many of these fine and unique artifacts may have been made in the village. Whether the obsidians and the quartz were worked at a distance or within the Hopewell enclosure is an open question. But the copper objects were probably made here. I base my theory upon this fact; that numerous nuggets and also chunks of partly hammered copper were found with the deposit covering skeletons 260 and 261. Some small, partly-worked nuggets were in the altars.

They bear unmistakable signs of hammering—several being half-flattened. Would these masses have been hammered elsewhere and brought to Hopewell's along with finished designs, axes or ear ornaments? I think not. But even if all the copper came (finished) from a distance, these nuggets and partly-hammered masses prove the copper to have been worked cold or, at least, after it was slightly heated. We do not need to depend entirely upon Mr. Moore's excellent presentation of analysis—

*Primitive Methods of Drilling, Smithsonian Report for 1894. J. D. MCGUIRE.



FIG. LXX.—Various facial angles of crania, Effigy Mound.

we have the silent yet portent testimony of the half-worked nuggets themselves as evincing the pre-Columbian age of all the copper.

In arriving at conclusions regarding the Hopewell material, we are confronted with a certain difficulty, and one that has been a constant stumbling-block to archaeologic students. Belonging to a high and strange civilization—as contrasted to that of the primitive American—we are apt to consider his motives and thoughts from our own standpoint.

We do not get down to his condition, nor do we appreciate his life and surroundings. When we try to name his various relics, giving to them uses to which we would put objects of similar form, our errors are particularly noticeable.

Miss Fletcher, the famous ethnologist, realizes this fault and calls attention to it in a recent paper on the Omahas.

“It is proper to call attention at the outset to a few of the perplexities of a research at first hand, in a matter as recondite as that under consideration.* There is the difficulty of adjusting one’s own mental attitude, of preventing one’s own mental atmosphere from deflecting and distorting the image of the Indian’s thought. The fact that the implications of the totem are so rooted in the Indian’s mentality, that he is unconscious of any strangeness in them, and is unable to discuss them objectively, constitutes a grave obstacle to be overcome.”

*A Study from the Omaha Tribe; the Import of the Totem.
ALICE C. FLETCHER, A. A. A. S.,
Detroit Meeting, '97.

(To be continued.)

NOTES ON DELAWARE INDIAN
VILLAGE SITES.

(Fourth Paper.)

About one-half mile north from ward or Indian village site number one, is located ward number two. The villages no doubt were thus sub-divided by order of the Delaware or Lenape tribe who controlled the Shawnee tribe, and held them in partial slavery and complete subjection. On the middle ground¹ between the two villages as above so called wards, are found but a few relics; but arriving at ward two is found a complete change in the order or mechanical shape of the arrow-points, which is of great interest in an archaeological point of view; so also the pottery which is entirely different in design, ornamentation and material.

It may be noticed that in ward two the relics are not quite as numerous as on ward one, but they are of finer finish and all of triangular shape; whereas on number one the larger portion of the arrows are stemmed and the balance triangular and roughly finished. Most of the the triangular arrows are carved out of jasper from the Durham jasper quarries. The pottery on number one is a mixture of clay, pounded quartz and shells, of rude manufacture, and has the appearance of great age. Some fragments are still in a good state of preservation, while others are rapidly disintegrating. A few pieces are rudely ornamented and perforated in order to suspend the vessel by means of a string.

The pottery on number two is abundant, but entirely distinct from that of other village sites in the locality. It is made of a finer quality of clay, and is profusely ornamented, unglazed, but well preserved, showing that primitive man had made considerable advancement in the art of manufacturing pottery, judging by the earlier specimens found on some village sites. The

1. Between the lower portion of the Indian town where relics in profusion could be picked up by any one so disposed, until within a few years ago, the writer and his friend Mr. A. F. Berlin, of Allentown, Pa., an expert archaeologist, were the last persons allowed to go over the ground by the owner of the premises, who is now getting together a collection of his own; there is quite a large space of ground almost destitute of relics.

ornamentation on most of the pottery is yet very distinct. While many arrow-points have already crumbled into dust, the pottery has successfully withstood the test of time, and resisted decay. The vessels have as a rule a series of lines around the rim.

Between the lines are numerous small indentations, the lines crossing each other at different angles, sometimes regular and at others somewhat oblique, showing, however, considerable taste and skill on the artist's part. It has been said that the ornamentation was the work of the females. If this be true it shows that they had an eye to the beautiful, not only in nature, but in their every-day art. The design was engraved on the vessel before it was placed in the oven. This was done with a sharpened stick, piece of bone, or an implement of stone prepared for the purpose. Other vessels were wrapped in coarse cloth, and are known to collectors as "cord or cloth marked."

Some of the finest celts, polishing stones, amulets, pendants, etc., have been found here, evincing the fact that primitive man had experts employed in some camps or workshops whilst in others the work was performed in a crude and imperfect manner.

We have devoted considerable space to the description of the various relics discovered in this village site, for the reason that the occupants thereof, in our opinion, consisted of a picked body of Delaware Indians placed here to watch, guard, and keep the unruly and quarrelsome Shawnees within proper bounds. The Delawares or Lenape Indians being the original owners of a large scope of country on both sides of the Delaware river, and being a large and powerful tribe of Indians, with numerous towns connected by trails² and signal camps, were in an ex-

2. Indian trails leading from campsite to campsite, along the larger streams, brooks, and creeks, to their cornfields, argillite and jasper quarries; to their treaty sites, where they smoked the pipe of peace or war; to their burial grounds, crematories, and sepulchers, where they performed their religious rites, were numerous in early times. A portion of an important Indian trail is still in existence in Northampton county, this state. Many public roads are laid out on trails, opened and tramped by primitive man.

cellent condition at the time, 1692, to take charge of the weak and demoralized gang of Shawnee warriors who applied for protection.

The Delawares had a tradition that they, or more properly their ancestors, lived in the western country, and in their travels eastward, which occupied centuries, they came to a great river named Messussipu, or Great River, so told by Squier, Schoolcraft, and other writers; but named by the Moravian missionary Heckewelder,³ Vamaesi Sipu, or Fish River. Crossing this river they fell in with the Mengerue or Iroquois, and with their combined forces went to conquer, and succeeded in overpowering all the obstinate tribes in their way. At length reaching the Atlantic slope, they took possession of the country and allotted the land lying along the great lakes to the Iroquois. The Lenape or Delawares dwelt in the south country on the four great rivers: Hudson, Delaware, Susquehanna and Potomac. The Delawares were divided into three grand divisions or separate tribal unions called Unamio or Turtle; Unalachtgo or Turkey and the Minsi or Wolf tribe.

Quite recently, while investigating an Indian village site about four miles east from ward No. 2 in New Jersey, a number of triangular arrows made of jasper were noticed mixed with stemmed ones of argillite. Further investigations may be made here by the writer, if time allows.

One half mile north of "ward" number two, on the extension of this same Indian

town, is a small campsite which is important in that most of the relics found are covered by from one to six feet of soil. The relics are generally discovered by workmen in digging cellars for buildings. The implements found here are arrow-heads, accompanied by pottery and charred wood. As a large portion of this Indian village site is covered with buildings and manufactories, no systematic exploration can be attempted of this ward number three.⁴

On the high grounds, about one-half mile south of this village, overlooking all of the country and village sites heretofore described, was located an important signal station or observation camp, during a long period of time. The principal business of the occupants of this camp appears to have been the manufacture of arrow-heads with notched bases. Large numbers of stone hammers, greatly worn by use, composed of residuary gravels which here form the northern boundary of the Mesozoic formation, are found here.

These gravels are composed of angular blocks of hard, silicious Potsdam sandstone, and are remarkably well adapted for the purpose of hammering flint, jasper, or other hard substances into shape. The Indian arrow-head maker along the river terraces,

4. Ward three is a continuation of the large Indian campsite, which it is impossible to clearly describe in any other way but by the ward method, or mapping; the latter method would entail unnecessary expense, owing to the large scope of country that would have to be included to cover signal stations, trails, burial-grounds, crematories, etc. It lies directly north of number two, and is bounded on the northern extension by Rodger's Run, and east by the Delaware river; the southern portion, between wards two and three, having a portion of neutral ground destitute of relics.

3. See History, Manners and Customs of The Indian Nations, who once inhabited Pennsylvania and the Neighboring States, by the Rev. John Heckewelder, of Bethlehem, Penna. *Memoirs of the Historical Society of Pennsylvania*. Vol. XII, pp. 47, 49, 51.

as a rule, utilized the ordinary glacial and post-glacial boulders found on the river's banks for hammers, not caring to transport these gravels from the hills, which, however, were better adapted for hammering purposes.

Following along Rodger's Run a distance of nearly one mile is situated a campsite where nearly all the implements consist of hammer-stones of premoraine gravels, and nearly all have the sides fitted to aid in holding the stone when used for hammering. The pits also prevent the jar when hammering a hard or refractory substance. These hammers were evidently used for different purposes, such as pounding acorns, hickory nuts, meat, bones, etc., for culinary purposes.

A few chips of jasper and argillite are found here; also a few arrows of the same material. The writer does not believe that the arrows were manufactured here, but were brought here from another place. After carefully investigating the surrounding country he inclines to the idea that this was a cooking camp, utilized when the water ran low at the jasper quarry, and contiguous Indian cornfield, where a small lakelet existed which in early times contained plenty of water; except, perhaps, in very dry seasons, when the water became unfit for use.

One mile further along the same stream was another implement manufactory. Here were made, apparently, arrow and spear-heads, as no other implements besides these two, accompanied by the necessary hammer-stones, are found. The hammer-stones are residuary gravel boulders, small in size, and show considerable wear.

CHARLES LAUBACH.

Riegelsville, Bucks Co., Pa.

"GIVE THE DEVIL HIS DUE."

A Defense of the Digger Indian.

Suffer a word of protest against the article of Mr. Francis C. Porter, in the October Antiquarian, on the so-called "Digger Indians of California." His treatment of the subject is so one-sided and unjust, so superficial and inaccurate, that I am unwilling to pass it unchallenged. To those who really know him, the central California Indian is very different from the imaginary creature Mr. Porter paints in lamp-black only. I would venture to suggest that he will acquire an assortment of colors, or go out of business. I write in haste and have not time to compile authorities. The appended is partly from memory, or a few notes I happen to have in my pocket; but mostly from personal knowledge of the much-slandered subject. It is my fortune to be intimately acquainted in some thirty-five Rancherias in Central California, located between Mendosino and Tulare counties. I have been in the homes of these people as their trusted friend; listened to their recitations in the school room, worshiped with them at their Christian altars, witnessed their funerals, looked upon their wild dances and ceremonies; in fact viewed them in every act and attitude of their life. I therefore feel prepared to assert positively that Mr. Porter's article is almost wholly misleading.

True, some of them are "filthy"—very filthy—as filthy as many of the white people to be found in every city of the Union; but not one-half so vicious or repulsive. Moreover, every case of extreme filthiness I have observed, was due, as it seemed, to extreme age or blindness—perhaps both. The party was too decrepit to properly care for the person and surroundings. Generally, these Indians are tolerably clean, both in person and dress; the young men notably so. With

neatly-trimmed hair, shaven faces, laundried shirts and "store clothes," they frequently present a better appearance than an equal number of young ranchers from the same community.

That they are not warlike, as compared with eastern tribes, is also true. But there are a few sane people in the country who construe that fact in their favor. Within the year the United States has been sneered at as a "nation of traders," as opposed to warriors. That he is "not brave" is a mistake. His valor is attested all over California, both against the Americans and in their behalf. Jose Jesus (Heazoo) and other chiefs led their warriors against the Mexicans and fought with bravery with the whites in the war which made California independent of Mexico. Tinkham, in his History of Stockton, pages 86-7, says: "After the arrival of Weber, an alliance was formed between the pioneers and the Indians, and this gave new strength, * * * * * Jose Jesus and his Si-yak-nm-na tribe doing good service for the pioneers both in the Micheltorena and the Mexican wars. * * * * * Jose Jesus was chief only by reason of his deeds of daring and bravery." On page 22 Mr. Tinkham gives a description of this chief: "Jose Jesus, the friend of the white man, is said to have been an Indian of remarkable ability; he was a man six feet high, of good proportions, and dressed in the style of a Mexican grandee. He had been taught by the fathers and at one time was the Alcalde of San Jose. Clean (Mr. P. please notice), proud and dignified, he was respected by all who knew him." On the same page the author quoted says: "This chief was a terrible foe to the Mexicans. * * * * * Sweeping down from the foot hills of the Sierras he drove off their stock, and if they resisted he gave them battle and was generally the victor." In 1829, he says, Jose's tribe "fought a battle with them on the banks of the Stanislaus, defeating the Mexicans with great loss."

As to dressing in "fringed breechclouts," "nude" males and children, "bark habitations" with "fire in the center of the struc-

ture," these are conditions more or less common to all Indians—yes, to all savage peoples.

How could Mr. Porter write: "I don't think they made or used flint or stone arrow points?" Was the gentleman ever in California? Or, did he ever take a peep into the glass cases of any museum worthy the name? As a maker of stone knives, arrow and spear heads the "Digger Indian of California" was the peer of any man who ever chipped a flint! In a few small places in Santa Clara county he seems not to have used them much, depending there on a pointed wooden arrow fire-hardened; but every county of the state yields these relics of the most exquisite workmanship. I have specimens recovered within a mile of my study which I believe are unexcelled. Happy the collector in any section of the Union who can show their equal.

Again, begging Mr. Porter's pardon, they did kill "game larger than ground squirrels and jack rabbits." In the different village sites I have excavated in the Sacramento and San Joaquin valleys I have found the remains of ducks, geese, antelopes, coons, coyotes, beavers, deer and elks; besides great quantities of fish bones and mussel shells. The main food dependence of the California Indians is, and was, fish (I am constantly surprised that the large part played by fish in the diet of these Indians seems to have escaped so many writers), and acorns. These—their "meat and bread"—they store in large quantities. In times of extremity and want they ate almost anything, including crickets, grasshoppers etc. These insects, by the way, are not necessarily unclean, and have been used by others without reproach. According to inspiration John the Baptist was the peer of any man born of woman; yet he chose a diet of locust (a kind of grasshopper still used as food in Judea and other parts of Asia), seasoned with honey. Edwin Bryant, a cultured Kentuckian, was not averse to it. In "What I Saw in California" he tells about some "Diggers" offering his party what he "ascertained to be service-berries crushed to a jam and mixed with pulverized grasshoppers." He says: "We purchased all they brought with them * * * * *, the prejudice against the grasshopper fruit cake

was strong at first, but it soon wore off and none of the delicacy was thrown away or lost. Prejudice aside, I have tasted what are called delicacies less agreeable to the palate."

As to being "pigeon-toed," nearly all Indians are such, especially in mountainous countries. Even a white man in climbing a steep mountain instinctively turns his toes in. It facilitates climbing. There is absolutely no confusing resemblance between the track of these Indians and that of a bear. Foot for foot, the "Digger" would lose nothing by comparison with the whites, but the whites would. Mr. Edwin Bryant speaks of the "handsome Arabian-shaped foot" of the Humboldt River Diggers; and on dozens of old crones in Central California I have seen feet that would adorn a Greek statue.

Mr. Porter insists on getting things mixed. Read: "The only marked features of the genuine American Indian are the long, straight, black hair and copper color." Now, instead of being features of agreement with his eastern brother, the hair and color of the Digger, so-called, are features of strongest disagreement. There are no "copper-colored" full-bloods in California. The color of these Indians is dark coffee-brown to African blackness; and instead of "straight" black hair many of them have hair that is beautifully wavy.

The climate of California, together with the habits of these Indians make moccasins unnecessary. Nevertheless, they do sometimes make and wear them. No longer than three months ago, I saw a band of eight Indians in Mariposa county, all wearing neatly-made moccasins.

As to ornaments, Mr. Porter is again in error. In the mounds and burial places are found long pins of polished bone, sometimes mistaken for "awls." These were stuck in the hair Japanese fashion, and to the protruding ends were fastened shells, feathers and other ornaments. In my cabinet are ear rings of soap stone and lip ornaments of polished serpentine. A number of these tribes made more and better wampum than the Mohawks and their confederates. I know of wonderful and splendid suits—worth a young fortune—which undoubtedly excel the eastern article. Nor is this an art learned since Mr. Porter "found them in

1849."—See Drake's *World Encompassed*. Fletcher, who visited California in 1579, gives a picturesque account of it as it was more than three hundred years ago. Then they have quite a variety of feather, quill and shell ornaments. In my collection is a unique and showy head band (used in the ceremonial dances) five feet long, made from the quills of the flicker's tail, fastened together parallel to each other, finished on either edge by leaving the black pointed tip of each fifth feather—a beautiful piece of work. Generally they are not given to bead work, but in some instances they excel in that also. In the writer's collection are three woven bead sashes, more than six feet long, in beautiful, geometric designs, showing exactly alike on each side. They are the work of a Stanislaus Indian, and are the handsomest examples of aboriginal bead work I have yet seen.

In conclusion let me say that I believe the Central California Indian is generally misunderstood. Much written about him was penned during the gold excitement, or by retired '49ers.

Many of these men were noble, brilliant and heroic. But it is well known that they were not in California in the interest of Ethnology. Few cared to be accurate; many sought to be sensational. Theirs was the golden age of fable. Through the loose and superficial writings of these well-meaning men one of the most inoffensive and strikingly interesting of our native races has been covered with undeserved opprobrium. The evil which this hapless people has suffered at the hands of these knights of the quill is equaled only by the atrocious conduct of those who shot, hung and poisoned the men, debauched the women and kidnapped the children.

But the beginning of the time is already at hand, I trust, when the use of the opprobrious misnomer, "Digger Indian," will reflect more on the intelligence of the user than upon the Indians so misnamed. I shall look with interest for Mr. Leeper's promised article embodying a letter on this subject from General Bidwell. The general, by giving those near him his watchful care, and throwing about them the arm of his protection, has demonstrated the capacity of the California Indian for civilization. He

can say to any skeptic, "Come and see." His word is authority, and those who really know the California Indian will join him in deprecating the common practice of calling these Indians "Diggers." The misnomer has grown out of a radical misunderstanding of him and his customs. As a matter of fact, he eats fewer roots than almost any of the tribes, though he digs more. At all seasons of the year he can be seen, singly and in squads, in the swamps and on the mountain side digging roots. But these are not used as food, but in the manufacture of baskets, an art in which he excels the whole round world. Even the Japanese with his deft fingers and infallible taste must yield to the despised "Digger" and take second place. These are not the coarse baskets of utility, but elegant things which the rich and cultured eagerly enshrine amid the costly bric-a-brac from many lands, and for which they pay from five to eight hundred dollars each. I insist on attention at this point: these misjudged Indians have been seen winter and summer, in sunshine and rain, digging amid the tules and swamp grasses, amid the ferns on the mountain side, and the fibrous roots of the fir; and the careless looker-on has thought: "Like the wild hog, he is rooting for his dinner"; whereas he was in arduous pursuit of an ideal! For centuries basket making has absorbed his life, and at his hands has reached a perfection elsewhere unknown. Out of that list of roots Mr. Porter thought to be his week's provisions, was constructed a poem in basketry which after use in the ceremonies of his people was burned at the funeral sacrifices of his dead.

Now, every man, or nation, has the right to be called by the most estimable thing about him; and since the "Digger Indian of California" is admittedly a world-beater in basketry, I propose that hereafter he be called the Basket Indian.

H. C. MEREDITH.

Stockton, Cal.

[None will question the sincerity of this masterly plea for the California Indian, or doubt either statement or argument advanced by Mr. Meredith in its support. All anthropologists, as well as philanthropists, will rejoice to know the "Digger" has at-

tained the favorable condition described by the gifted Stockton clergyman. However, sounding praise of the valor and courage, and the social elevation, and enlightenment of the Indians there of today is totally inappropos to sustain the sweeping charges of slander and misrepresentation made by the reverend gentleman against Mr. Porter and other California pioneers, in their portrayal of the California Indians of their day. It must be borne in mind that we, the pioneers, met these Indians there, almost fifty years ago, in their primitive squalor—wild, naked savages. They were not then to be observed with "neatly trimmed hair, shaven faces, laundered shirts and store clothes"; nor was it our privilege to "listen to their recitations in the school room; or to worship with them at their Christian altars." We saw them in their pristine degradation, while Mr. Meredith has only seen them acultured by half a century's contact with civilization under the patient tutelage of the church and teacher. As in the fabled controversy about the chameleon's color, we are all right, having seen the same red man in his different aspects.

Again, what valid reason is there for attaching opprobrium or contempt to the term "Digger"? Is it only because of its suggestiveness of their ancestors' low estate?

While protesting vigorously against the "opprobrious" designation of "Root Digger," and denouncing it as an unjust "misnomer," Mr. Meredith informs us that these much-malignant natives "at all seasons of the year can be seen, singly or in squads, in the swamps and on the mountain side digging roots." "These misjudged Indians," he further says, "have been seen winter and summer, in sunshine and rain, digging among the tules and swamp grasses, amid the ferns on the mountain side, and the fibrous roots of the fir." Evidently then, they are root diggers. It is immaterial whether they dig roots for food (as they do indirectly), or for raw material to supply other industries, or "for an ideal," the fact remains that they are root diggers. Hence, to call them root diggers is certainly no misnomer, and it should convey no more disrespect or contempt than the terms ditcher, tiler or basket-maker.—Editor.]

*SURVIVALS OF THE STONE AGE.**Use of the Stone Axe.*

(Dictated.)

Having become much interested in the well-written papers recently appearing in your valuable journal on the use of stone implements by the western Indians within the observation of persons still living; and of new accounts of the Digger Indians of California, I will give you some of my recollections of what I saw in that line while there, at an early day.

I was one of the Argonauts who sailed across the plain in 1849, with ox-teams, in search of the Golden Fleece. Many incidents occurred during this voyage, and after reaching the promised land, very well worth telling; but not altogether appropriate for the pages of a scientific periodical.

There are no doubt many persons still living who have seen Indians who used the bow and stone-pointed arrows as their only weapons for war and for securing subsistence; and there are yet a few who have seen Indians manufacture stone arrow and spear-points. But I have never yet heard of a white man who has seen an Indian make a stone axe; and very few white persons still among us have ever seen stone axes in practical use by the aborigines.

Drifting about the gold diggings with varying fortunes, sometimes in luck, but oftener out, myself and mining companions in the summer of 1850—I think it was—pitched our camp on the bank of the San Joaquin river, near old Fort John, about a hundred and fifty miles southeast of Stockton. We had been there but a short time when we discovered the fact that we had neighbors of a sort that we had not previously been accustomed to. They were

Indians known then as Root Diggers. There were, at a rough estimate, fully two thousand of them, and all seemed to be under control of a chief who went by the name of Tom Keet. As we were camped for nearly a year within three or four miles of them we had many opportunities for observing their manner of life and the methods they employed in manufacturing their canoes and other articles necessary in their domestic and commercial pursuits.

In this communication I will only describe their canoe making, having witnessed the process of construction from beginning to launching of the dugouts. In this industry we saw them fell pine trees over three feet in diameter with stone axes. I cannot now say whether the axes were with or without grooves, or of what sort of stone they were made; for at that time I was much more interested in the golden age than in that of stone. The axes they used, however, were of stone, and provided with long, springy, willow handles; the small end of the willow being securely withed around the stone and then wrapped around the handle and reinforced by strips of raw hide braided in, and the whole made firm with a coating of some kind of gum or glue. In cutting down a tree they used the pole of the axe as a hammer and by hard, quickly-repeated blows, soon battered loose a cortical layer of the wood just as we, when boys, loosened the bark of pawpaw sticks by beating them, for making whistles. When the woody fibers were in this way broken or battered loose they were pried up by inserting under them a greasewood stick, chisel-shaped at the end, and hardened by burning; or armed with a chisel-shaped stone fastened to it with deer sinew

and gum. To aid this lever in breaking away the loosened layer the axe was reversed and with its edge the wood was cut or hacked until free and then removed.

The kerf made by this primitive mode of chopping was necessarily very broad, as each layer of bruised wood cleared away was shorter than the one preceding it. In this labor, although the canoe to be made was individual property, all, or as many of the men as chose to help, joined in it; but in a very leisurely way. Three or four would hammer away at the same time; but as soon as one got tired—which usually required but a short time—he would throw down his axe and saunter off. But another was ready to take up the implement and renew the battering. And when one would ply the axe until he separated a layer of wood from the tree, another was by with the wedge-pointed stick to pry it up and hold it steady for the axe edge to hack it off above and below. By this co-operation of labor—learned, perhaps, from the beaver's mechanical instinct—they felled the tree in comparatively a short space of time. With General Bidwell, and other pioneer Californians, I now regret very much that I was not at the time sufficiently interested in aboriginal arts to pay more attention and closer study to the practice and ways of our dirty neighbors. They possessed no traits that invited social intimacy, but many that were disgusting and repellent.

After the tree had fallen the community of labor seemed to end, and the future proprietor of the prospective craft and his squaws finished the job. The trunk of the prostrate tree was burned off at the proper length and the bark all pounded off with rough or rudely-edged stones. Then the

top of the log was cut down to a level, flat surface, partly by the hammering process but largely by burning. In the same manner the curved shape was given to the prow. Then commenced the excavation or hollowing out of the log by fire, aided by picking down and scraping out the charred wood with stone implements. To limit the action of the fire wet mud was placed on such portions as were not intended to be further reduced; and to aid the needed disintegration of the green wood by the fire it was fed with dry pine knots and pitch. The finishing and smoothing was exclusively the work of the squaws. With broad, sharp-edged, flat stones they scraped and rubbed both the interior and exterior until the dug-out was of regulation form, with walls of uniform thickness or thinness and the entire surface in and out perfectly true and even.

JOHN YAPLE.

Virginia, Illinois.

[Mr. John Yaple, author of the foregoing paper, whose failing health now necessitates the services of an amanuensis, is a native of Cass county, Ill., and one of its most substantial and highly respected citizens. His farm home is within a mile of his birthplace, from whence he migrated to California, in 1849. He is one of the very few living persons who have seen the Indian, not yet emerged from his savage arts, making practical use of the grooved stone ax. His description of the method of its employment satisfactorily explains the fact, often observed, that very many of the grooved stone axes found are broken or mutilated at the poll, or square end, as, in the work for which they were designed, that end was the one applied to the hardest and roughest usage.—Editor.]

OUR DIGGER INDIAN NEIGHBORS.

(*First Paper.)

In the closing summer days of 1850 we settled down at the head of Dark Canyon, six miles east of Georgetown, El Dorado county, Cal., and were building a log cabin preliminary to beginning active mining operations, when early one morning, a member of our firm went out hunting; but soon returned reporting an unusual commotion among the Indians a short distance east of us. Quite a number, he said, had collected together on a little flat, or creek bottom, a mile or so beyond us, and others were joining them; and all appeared solemn or sullen. Up to that time we had but occasionally caught a glimpse of a lone Indian hunter; or of one with his squaw passing through the pine forest apparently homeward bound from some food-quest expedition. The accounts we had received of these dusky neighbors, who, we learned, rendezvoused near the foot of the main range of the Sierras not far away, had not inspired us with effusive respect for, or confidence in them, but rather the reverse. We knew that we were intruders in their hereditary domain and trespassers on their vested rights; consequently felt a trifle uneasy lest they possibly contemplated beginning some concerted plan of hostilities. It was well to be on our guard, we thought, and prepared for all emergencies; so, we proceeded at once to send out a detail for observation and picket duty. Myself and the comrade who had brought in the alarming report were selected for this service. Proceeding cautiously through the dense woods and scattered patches of underbrush we at length gained a point overlooking the little valley

from which we had a fair view of the Indian camp secure from detection. We soon saw that they had no arms and their movements were not warlike. They numbered perhaps a hundred, or less, of both sexes and all ages, from board-swathed babes to tottering senility. The men looked grave and silent and the squaws seemed to be in deep grief, giving vent to their feelings in spasmodic, mournful howls and fits of weeping. The boys and younger men were piling up in the middle of the open level space—an irregular circle a couple of acres in extent—a compact heap of dry wood, some eight feet in length by four in width and four high, which they completed a little before noon. After a brief consultation among the men four of them went to a small brush hut at the foot of the hill where several squaws were loudly lamenting, and brought from it the dead body of an Indian man, partially covered with what appeared to be wreaths of green leaves, and carefully laid it upon the improvised crematory, amid the loud and prolonged shrieks of the whole female contingent. Just as the sun reached the meridian one of the Indian men brought from a camp fire a blazing firebrand and ignited the funeral pyre. This was the signal for a renewed and stronger outburst of wailing on the part of the squaws, reinforced by chanting cries from the men, swelling in emotional volume and intensity as the flames leaped through the dry combustibles and hissed and crackled with increasing fury. The men walked slowly around the burning mass with drooped heads uttering a doleful dirge; the squaws stood around in small groups or crouched on the ground in frenzied lamentations, while the boys continued to feed the conflagration with fresh supplies of fuel. There was no variation in this proceeding from the routine described; there was no posturing as if in supplication, or in adoration of a higher, unseen power; nor sacerdotal ceremonies accompanying their unrestrained and vehement expressions of sorrow; but their chief aim seemed to be an earnest desire to cremate the dead body as completely and speedily as possible. In their march around the fire one of the Indians cast into the seething flames a bow and quiver of arrows, and a

* The writer is aware that in this paper, and in the one to follow, there is nothing new, and little of value, to the Ethnologist. Perpetuation of testimony relative to the local Indian status almost half a century ago, by another eyewitness—a class of evidence now rapidly disappearing—is his excuse for publishing it.

few other articles we could not recognize—the property of the deceased presumably—and some of the older squaws approached and added to these votive offerings two or three baskets and several packages apparently wrapped in bark or grass coverings.

We watched this weird scene until after the setting of the sun, when the pangs of hunger impelled our return to the cabin. Returning to the flat the next morning we found it deserted and silent with only the numerous tracks of bare feet imprinted on the soft ground to indicate the strange event of the previous day. Scarcely a trace or vestige of the fierce fire that consumed the dead Indian remained. The ashes had all been cleanly gathered up and carried away or secreted.

This band of Indians, locally known as Nemshoos, an offshoot of the Pah-Ute stock inhabiting the Great Basin, when we settled near them, were emerging from their natural reserve, or timidity—and may be hostility—and beginning to seek the acquaintance of the whites, and it was not long before we had abundant unsought opportunities for observing them in all their beastly degradation. Of medium stature, with tawny or dark skin, bandy-legged, broad flat faces, wide mouths, snub noses, small eyes and great shocks of coarse black hair falling on their shoulders and cut square in front just above the eyebrows, made them objects of extreme repulsiveness. The facial features of their young, of both sexes, had a Mongolian, or Malay, cast, that, however, soon hardened to the regulation “Digger” type. When we first saw them all the children and adult males were entirely nude; and the only covering of the females was the breechcloth, not made of cloth, however, but of various native materials, in style differing according to the variation of taste, industry or mechanical skill of those who wore them. Some of these fig-leaf garments

were of loosely-woven coarse grass that gave the wearer the appearance of having her hind quarters thatched; while others were of soft, well-dressed skins fitted and fashioned neatly and elaborately ornamented. A middle-aged squaw, horribly ugly, a frequent visitor to our camp, wore a loin-covering that would have been a prize in any museum. It was made of dressed deer skin ornamented all over with small sea-shell beads and minute sparkling stones, and all around its upper band there hung a fringe of grizzly bear's claws, as long as one's fingers, strung together less than inch apart. She seemed very proud of it and knew its value, refusing my offer to buy it for two ounces (\$32.00) of gold dust.

The first attempts of the Indian men to adopt our sort of clothing were very amusing. Prowling about the deserted camps of emigrants and miners they gathered up all articles of cast-off clothing in common afterwards making a division of them by each taking all the garments of one kind, which he put on and wore all together. It was not uncommon at that time to see a buck entirely naked stalking about with two or three old hats on, one or two stuck inside of the other. Another strutted around with three or four old vests on, one over the other, and nothing else. Still another had on, in the same fashion, several old tattered shirts; still another a plurality of ragged old coats; and one, I remember, called on us perfectly naked save having his feet encased in several pairs of old socks. But the most ludicrous instance of this budding civilization was that of a vain young Indian whose only garment was a calico shirt originally of flashy colors. He had observed that our coats had tails, so, to be in style, he had torn out the front width of his shirt square across the waist and with small thorns had pinned the detached piece to the garment's tail behind.

With increasing acquaintance they became persistent beggars; and, though often in our camps during our absence, I never heard of a theft committed by them, or any act instigated by malice or viciousness. I neglected to learn anything of their social regulations, or of their theological beliefs—if they had any. What estimate they placed upon female virtue in their own domestic relations I did not learn; but in their intercourse with the whites feminine chastity was unknown.

But a short time after the cremation scene I have attempted to describe our Indian neighbors began to cautiously approach our mining camps and towns; and then we noticed for the first time the conventional mourning costume worn by the female relatives of the late deceased. This badge of grief consisted of a liberal application of black, tar-like pitch obtained by burning green pine wood, smeared over the face, head, neck and all the upper portion of the body. Whether or not those squaws, who recently so ostentatiously advertised their bereavement, were actuated—as is sometimes the case among their white sisters of our day who perpetuate this relic of barbarism—by the vain notion that black is becoming to them, is now not material; but more hideous objects in human form than they were can scarcely be imagined. Presumably, their period of mourning was commensurate with the durability of the pitch coating; and as it gradually wore away they logically passed successively through the stages of subdued grief, half mourning and mitigated sorrow to new proposals. This band of Indians had neither horses or dogs, and the only property they possessed were the bows, arrows, quivers and fishing spears of the males and baskets manufactured by the squaws. Their bows were made of yew, or other tough, light wood, backed with deer sinew, and their

stone-pointed arrows were neatly feathered and perfect in every detail. In a former paper* I described their process of making arrow-points which they often repeated about our camps, chipping, with equal adroitness, quartz, slate or glass. Myself and comrades tried, time and again, the experiment of stone chipping; and though we used the Indians' horn or bone punch, and employed his method of manipulation, we invariably failed. Their fish spear was a very ingenious contrivance and used by them with surprising skill. In the pointed end of a shaft five or six feet long was a finely-polished bone, the fourth of an inch in diameter and a little more than an inch in length, pointed at each end, fitting loosely in a small hole in the wood just deep enough hold it in place. This bone point had a crease cut around its middle in which a fine, strong cord six or eight inches long was firmly tied, the other end of the cord being fastened to the shaft an inch or two above its point. When the fish was struck with this cunning device a quick jerk of the shaft drew the imbedded pointed bone to a transverse position and held the finny prey as securely as could the barb of a steel harpoon. The baskets woven of root fibres and willows by these nude savages were of different patterns and kinds, and marvels of taste and symmetry. That human beings so evidently low in mentality, and seemingly as destitute of the instinct of progression as birds or beasts, should have attained the high mechanical dexterity exhibited in the fabrication of their weapons and basketry, is truly surprising. It is a forcible illustration of the development of faculties by the necessities of life-support and environments.

J. F. SNYDER.

Virginia, Ills.

* The Antiquarian, page 231.

EDITORIAL.

The present number completes the first volume of this publication.

In the past months we have earnestly endeavored to fulfill the pledges made at the commencement: that we would publish a monthly magazine in the interest of general archaeology, with special attention to studies regarding Primitive Man in America, and the natural history of our indigenous Indians, both ancient and recent.

The measure of our success in this endeavor we submit to the verdict of the public.

We made no claim of infallibility, and our pages have not been absolutely free from errors and mistakes in either the literary or mechanical departments.

A fundamental mistake was in the selection of an inadequate name for our periodical. We soon discovered the title, "Antiquarian," to be generally objectionable for many reasons; but mainly because it was not a sufficient index to the intent and character of the work we had undertaken.

The term Antiquarian, as usually interpreted, implies one versed in the lore and arts of ancient, written history, and not necessarily an investigator or exponent of science.

The task we assumed in this enterprise includes the study of historical antiquities and much more.

It is, and has been, our aim to labor for the progress of Science in all its subdivisions bearing upon the early conditions and characteristics of the native American race—or races; and incidentally upon archaic life of Man throughout the world.

Therefore, in accordance with popular demand, to harmonize the title of the magazine with its special purposes, we have concluded to change it, with the beginning of the second volume, to *The American Archaeologist*.

We are pleased to announce that from its initial number the Antiquarian gained in popularity and in patronage, soon passing from the stage of an experimental venture to that of an established place in the Science literature of our country. It attracted the attention of students of all classes, as well as of general readers, and secured

for its pages contributions from the pens of men distinguished as writers, thinkers and investigators.

While making no extravagant promises for the future, we will try to profit by the experience of the past year and make it available in avoiding errors, strengthening our weak elements and improving our strongest. We will spare neither efforts or expense; nor will we neglect any duty or obligation to retain public confidence and maintain *The American Archaeologist* among the first of its class in current literature.

Dr. J. F. Snyder, of Virginia, Illinois, will remain in the position of Editor-in-Chief; and will be assisted by Professor A. F. Berlin, of Allentown, Pa.; Mr. Harlan I. Smith, of the American Museum of Natural History, New York City; and Dr. Clarence Loveberry, of Columbus Ohio as Managing Editor and in charge of the department of Notes, Late Discoveries and General News Items. Professor Berlin will have special supervision of the Collector's department; and Mr. Smith of the division of Folk lore, linguistics, university and museum work. The Associate Editors will not, however, be limited to their special charges, but will co-operate in all departments of the magazine where their assistance can be of service to promote its interest and efficiency.

The *American Archaeologist* will be issued promptly on the 15th of each month, containing original papers and reprints of high merit, with full and ample illustrations and all the latest current Science news. It is the only publication in the United States devoted exclusively to the study of Archaeology and the aboriginal American race; and is offered at a subscription price so moderate as to place it within the reach of all.

There is a rare disorder of the brain, usually diagnostic of softening of that organ, known as *aphasia*, marked by inability in speech to recall certain words wanted and the substitution in their place of others totally irrelevant. And at times there comes over us—some of us—an aphasia of thought; a psychic hiatus, as it were, when memory is evanescent, or the

Astel shell is off duty and the incarnated Ego makes assertions known to be wrong. We are undecided which of the two conditions—if either—was responsible for the *lapsus memoriae*; but in the March number of *The Antiquarian* we stated that the prehistoric American Indian was unacquainted with the dog, when we at the time knew very well that he was. Several years ago, as a vacation pastime, we translated the narrative of *Cabeza De Vaca* from the French of *Ternaux Compans* into English, and were strongly impressed by the Spaniard's experience with the Indian dog as an article of diet. The dog was here long before Columbus. Whether the Indian brought him along when he came, or invented him by domesticating the wolf; or acquired him from the Eskimos, we may never know; but he had him all the same. Remains of the dog and the Indian, buried together, have been found in shell heaps on Lopez island in the Vancouver archipelago; and Professor Mercer found the two associated in shell heaps of Maine and in caves of Yucatan; and they have been together exhumed from the sepulchres of the Inca race in Peru, and in other localities. And so, we misrepresented the American dog's antiquity last March, for which we now offer him this apology—a poor one being better than none.

And this reminds us that Professor F. W. Putnam has promised to publish—at some time—a treatise on the Prehistoric American Dog which will be exhaustive of all that is known of this companion of the earlier native Americans.

In the November 5th number of *Science* are reports of "A new investigation of Man's Antiquity at Trenton," by Professors Henry C. Mercer and Arthur Hollick, conducted last June by the two gentlemen named, together with Professor G. F. Wright, of Oberlin, Ohio; Dr. C. C. Abbott, of Trenton, and Messrs. H. B. Kummel and G. N. Knapp, of the New Jersey Geological Survey. On the top of a bluff near Trenton they dug down a foot or more through the surface soil, then six or eight inches through what they style "the zone of doubt"—a very appropriate name for the whole thing;—then some two or two and

a half feet into a yellow sand having "films of stratification" and decided to be of glacial origin. In his "conclusions," Professor Mercer says: "Fifty stone flakes, mostly man-made, not of argillite alone, as we had been led to expect, but of argillite, chert, jasper and quartz, one battered pebble and two fragments of anthracite coal, thus positively found in the much-discussed yellow sand. * * * * The antiquity of man, at the site, judged by these observations, depends on three questions: First—Are the significant chips in the yellow sand artificial? Second—Are they in situ in the yellow sand? Third—What was the age of the sand?" The two first questions he answers in the affirmative; the third he prudently leaves to be decided by Geologists. Professor Hollick also answers the two first interrogations in the affirmative and believes the sand to be of glacial age, and adds: "The only controversy which seems possible is over the question of intrusion from above, and in view of the facts now adduced, the burden of proof should in fairness rest with those who hold this view." And thus, the case of preglacial man in New Jersey is again continued by consent until the next regular term.

In "Tools of the Nation Maker" Professor Henry C. Mercer appears the same adept in antiquarian research that he is so well known to be in prehistoric archaeology. This pamphlet, of eighty odd pages, from his versatile pen is the first publication of the Bucks county, Penn., Historical Society; and is a descriptive catalogue of 761 objects in that Society's museum, comprising household utensils and appurtenances, tools, fabrics and implements in use during pioneer times in the Keystone State. Catalogues generally are dry lists of things set down alphabetically; and are as uninteresting and disconnected reading as a dictionary; but in this inventory of old mechanical aids and crude appliances Professor Mercer has given us a delightful work that carries us back to the simple home life and frugal industries of the sterling people who laid the foundations of a great state. In his enumeration of the primitive flails and hog yokes, the candlesticks, wooden spoons and chimney cranes, and so on, a large part of

them collected and donated by the professor himself, he gives the provincial German name of each; and intersperses the whole with lucid descriptions and explanations and charming bits of traditions and folklore.

These relics of by-gone days and auxiliaries in nation-making were obtained, he says: "From the sweet-scented herb store of the ancient garret, to where the mill race washed the mossy machinery of the crumbling mill; from the dark recesses of a bake oven to where a north light wanes through dusty windows upon the granary or wagon house; from the smelter's iron heap to the woodpile, the search for these desired and neglected things has led us. The historian has overlooked them. The antiquarian has forgotten them. But when we realize the value of the associations that perish, as they pass away in our midst, we commend them as heirlooms to be saved from destruction and set in a place of honor."

The remarkable series of papers by Professor Warren K. Moorehead, appearing in this magazine since last May, embodying his report of the exploration of the Hope-well mounds, in Ross county, Ohio, will be concluded in our January number. The strange deposits of art remains he recovered there, so graphically and minutely described, are the most wonderful yet brought to light in the United States, and have attracted the interest of scientists throughout the civilized world. His report, now nearing its conclusion, is, among the records of American prehistoric archaeology, one of the greatest value.

By the courtesy of Major Horatio N. Rust, of South Pasadena, California, we have received a copy of publication No. 1 of the Pasadena Academy of Sciences, entitled, "Report on the Birds recorded during a visit to the Islands of Santa Barbara, San Nicholas and San Clemente, in the Spring of 1897." By Joseph Grinnell, Pasadena, Cal., August, 1897.

This pamphlet is the report of the Ornithologist of a scientific expedition sent by the Academy to investigate the fauna, flora and archaeology of those islands, and com-

prises a list of thirty-one species of land birds and twenty-four of aquatic, identical with those of the mainland; the farthest island being sixty miles distant; and all three are little more than rocky, flat tops of submerged mountain peaks. The birds seen and secured were carefully noted and the list is no doubt accurate and complete. The expedition obtained four hundred and fifty bird skins and many eggs for the collection of the Academy. This report will be supplemented by those of the Entomologist, Zoologists and the two Archaeologists of the exploring party. Major Rust, who has contributed highly interesting and valuable papers to *The Antiquarian*, is an active member of the Pasadena Academy and an Archaeologist of national reputation.

J. F. S.

There has been for some time going the rounds of the press an absurd and ridiculous story of the finding of primeval weapons and other implements which once belonged to those notorious and much-written-about progenitors of the human race, styled Adam and Eve. An Englishman named Senton-Karr was the finder of these objects, and he claims he discovered them near the site of the historic spot where happened the accident which to the human race has caused so much tribulation. As there are more than seventy-five sites now claimed for the Garden of Eden, the demand of the Englishman must take its chance with the others. Should the savants in the Smithsonian Institution at Washington, where the implements now are, having, we are told, been brought there by purchase, find Adam's monogram on anyone of them, then will Archaeologists be compelled to believe that they were made use of by him, and that perhaps with one of them Eve knocked down from the tree the fruit which caused her partner so much trouble.

Such silly propositions cast ridicule on the noble science of Archaeology, and its adherents should frown down upon them.

A true Archaeologist whose sole aim is the elevation of the noble science for which he stands will not for any reason seek to foist upon its students such nonsense.

A. F. B.

BOOK REVIEWS.

Dress and Ornaments of Certain American Indians. By Lucien Carr.

Professor Carr, of the Peabody Museum of Ethnology, has given us in this treatise an admirable supplement to his late monograph on "The Food of Certain American Indians." It is a reprint, of 76 pages, from the Proceedings of the American Antiquarian Society, at its semi-annual meeting, April, 1897; and is—as are all of his special contributions, to our knowledge of American aborigines—a marvel of patient and industrious research, well written and perfectly arranged, with voluminous references and notes. Upon the physical figure drawn of the historical Indian, Professor Carr has placed his barbarian clothing and then his ornaments, describing the materials of which they were fabricated, and processes of their preparation and manufacture, with suggestions of the probable uses and purposes of objects heretofore of unknown utility. From this full and highly interesting account of the dress and ornaments of our recent Indians we can estimate the vast amount, variety, and value of similar articles wrought of perishable materials, no doubt, deposited by earlier Indians in their mounds and graves of which no vestige now remains.

J. F. S.

Monumental Records, No. 1, Vol. 1. Edited by Rev. Henry Mason Baum, D. C. L. New York City. November, 1897.

This new candidate for public favor and patronage is, in form, a large, royal, quarto pamphlet of sixteen pages, that proposes to "give to the public the history of the World, brought to light by the spade of the explorer and toil of the scholar;" and its special features each month will be, as stated in its prospectus: "First, A leading article in which some historic locality or ruin will be illustrated and described. Second, Archaeological, Geographical and Historical Notes on current discoveries; and Third, A brief review of current literature on the province of Monumental Records." The present number is mainly a review of Professor William H. Holmes' recently published *Monuments of Yucatan*, finely illustrated by many of the author's superb drawings and photographs; to which is added a sketch of Professor Holmes (with an excellent portrait), written by Alfred

R. Calhoun. Then follow several pages of short descriptive papers on ancient inscriptions and highly interesting notes. It is published monthly by the Monumental Record Co., 218 Broadway, N. Y., at the price of \$1.50 per annum.

We have received from the Peabody Museum of American Archaeology and Ethnology, Nos. 2 and 3, of its "Memoirs," following No. 1, the report on Prehistoric Ruins of Copan, Honduras, which we noticed in our March number. No. 2 is a report of the exploration of the Cave of Loltun; and No. 3, on the Chultunes of Labua, in Yucatan, by Mr. Edward H. Thompson.

We will endeavor at our earliest convenience to notice at length these reports of Mr. Thompson; and, incidentally, the great work the Peabody Museum is doing in broadening our area of knowledge of American prehistoric people and their modes of life.

CORRESPONDENCE.

Dear Friend: Palaeolithic man of America has never interested me. In the first place I could never find a perspective for him. French and English students can read documentary history of their respective countries for two thousand years; back of that is a past of bronze and iron; back of that the neolithic period, and further back palaeolithic man, if you please. At any rate looking as through a long cone from its wider end there seems to be away yonder a forlorn human group with little of life's comforts. They have a perspective. Not so in America.

Long ago the Eskimo glacial man appeared to me still more mythical. He was alleged to have etched beautifully on bone and antler. Modern Eskimo, under instruction of sailors and Russians, after having acquired steel and a knack of using it also etch on ivory, bone and antler and they also carve in the round. But his ancestors never etched. I have examined all the unsophisticated Eskimo bone work that I could find and there is not a scrap of etching on it.

There may come abundance of it now after this date if it will help a speculation, but at this writing there is none. So, they have been saying, "Lo here! Lo there!" and I have ceased to run after them.

Finally, I do not think that those who have discussed the question of palaeolithic man have learned to draw a proper distinction between history and anthropology, or between historic science and the natural history of man. History relies upon documents and human testimony; it rests upon the credibility, skill and number of witnesses; as such it can have no place in the natural history of man. If one were to say that he had received a certain piece of stone from a man who said that six months ago he had taken this stone from an alleged place, that is not archaeology, but history. It is forever ruled out of the area or field of scientific archaeology. It can never become scientific.

It is very well known that when an astronomer makes an assertion to the effect that a certain star behaves in a certain way, any astronomer on earth may turn his telescope to the star and verify the assertion. It is the same way in physics, chemistry, botany, zoology, human anatomy, physiology, linguistics, technology, fine art, social life, folk-lore, mythology and religion. It is so in true archaeology; an ancient grave is opened and examined by many and left in such a condition that it may be explored again and again. Another grave is opened in the neighborhood and is precisely like the first, and the third is opened with like effect, so that men begin to predict that in the next grave you open in that enclave the skeleton will be resting at full length on the back with the feet towards the west, or that some phenomenon will appear. We are now getting within the true circle of science, and if these predictions are verified on examination, the explorer feels that he is laying the foundation for a scientific study. We have nothing of this kind with reference to palaeolithic man. The question has all along been one of history and geology, but not of scientific archaeology at all. Either the pieces called in as witnesses derive their standing from testimony or have been taken from dubious geological horizons. I am,

Sincerely yours,

O. T. MASON, Curator.

Mr. Warren K. Moorehead, Columbus, Ohio.

Bryant. The poem in which the passage occurs is "The Prairies."

Yours very truly,

JOHN BROWN JEWETT.

Editor of The Antiquarian:

In the July number of the Popular Science News, page 156, there is an interesting article by Dr. M. M. Kilpatrick in regard to a stone horn, now in the Museum of Mercer University, Macon, Georgia. I write these lines merely to call attention to another similar relic belonging to Mr. James McLaren, who lives in Jasper county, Mississippi. This horn was found, several years ago, in a ravine near Mr. McLaren's house, and is very similar in every respect to the one described by Dr. Kilpatrick. It also is used as a dinner horn. A close comparison and examination of the two horns would doubtless determine whether they are really human handiwork or simply freaks of nature.

H. S. HALBERT.

Conchatta, Miss.

Newtown, O., Nov. 19, 1897.

Mount Pleasant, Iowa, November 25, 1897.

Editor Antiquarian:

An item of interest now, which came to my knowledge more than forty years ago, had slipped my memory, but has been revived by reading an article in the November number of the Antiquarian.

At the time I refer to, 1855-6 and 7, I was in business at Forest City, California, with a partner who was a Welshman, by the name of Phineas Edwards. We had a number of customers among the Welsh miners at that place, who were intimate with Mr. Edwards on account of his nationality. One of them told him that he had a year or two previous to the time of the conversation, encountered a tribe of Indians in the mountains south of Salt Lake Valley, Utah, who spoke the Welsh language, and spoke it sufficiently correct to enable him to very easily carry on a conversation with them. If this be so, and I have no doubt of the truth of it, it would be highly interesting to an anthropologist to hunt out that tribe; having with him a linguist, or still better a Welshman, to assist in the investigation.

My observation from a slight intercourse with numerous tribes and bands of Indians, leads me to the undoubted conclusion that they are of different origin. Some tribes may be indigenous and others exotic in origin. They cannot

To the Editor of The Antiquarian:

The author of the quotation referred to by your correspondent in the November number of the Antiquarian, page 308, is William Cullen

be universally derived from the same root. Some tribes vary from other tribes in facial contour and distinguishing characteristics as widely as the Aztec varies from the Mongolian.

I regret that I am unable to shed more light upon this interesting subject. Mr. Edwards died long years ago, and I know nothing of his informant. If the tribe can be found, and doubtless it can, and the fact ascertained that they spoke the Welsh language, with its many peculiarities, that will establish the fact that they are exotics, and may be the means of shedding a flood of anthropological light.

FRANCIS C. PORTER.

Mr. Chas. W. Mantelov, Cadillac, Michigan, describes some very interesting specimens in his collection, but owing to lack of space, we can only mention a few of the rarest pieces. In his cabinet are four rough granite blocks, $3\frac{1}{2} \times 3\frac{3}{4}$ inches, beveled on the broad ends. He has some beveled scrapers that are very highly polished on the underside, also a few drills like A. B. Coover's triangular arrows. He would like to know the names and use of these instruments. Can some collector answer these questions?

BOGUS ANTIQUES.

The royal British antiquarian and archaeological societies have lodged a petition with Lord Salisbury protesting against the peculiar form of prison labor in Egypt since the Khedive's penitentiaries and jails have been under English management. It seems that the convicts, of whom there are twelve hundred in the Jourah prison alone, are employed in manufacturing bogus antiques, for which there is reported to be a large market, especially in America. The petitioners declare that the forgeries are so clever as to be scarcely distinguishable from the real article. As yet only antiques of relatively small dimensions have been produced, but the prison authorities express the hope of being able, in course of time, to turn out full-fledged mummies and sarcophagi. The scientific societies in England point out, with some degree of justice, that while this form of prison labor may have commercial advantages, it practically renders the British government a party to the fraud.—Boston Transcript.

Daniel McIntyre, a farmer living near Golden Eagle, Ill., has a pocketpiece which is one of the results of a ghastly find made while plowing in a field a half mile south of Golden Eagle. It is a Spanish coin, bearing the date 1428. As Mr. McIntyre exhibited the coin to a party of friends in the corridor of the Laclede Hotel yesterday he told how he found it. Last April he concluded to put in cultivation a piece of wild land which had always been used as a pasture. In preparing the land he found it necessary to fill up a ditch about 8 feet deep which the rains of ages had worn across the field. While he was plowing the earth into the ditch from the sides he felt his plow strike something like a stone. It broke, and the plow passed on. Mr. McIntyre stopped to investigate, and found that he had opened a grave. The object which the plow had struck and broken was an earthenware vessel, and among the broken pieces of crockery lay several coins. These all proved to be Spanish coins bearing dates earlier than 1450.

The plow had uncovered the skeleton of a human being, also. The body had been wrapped in a casement of skins before burial, and the mold of the human form could be plainly seen inside of the wrappings. The view of this lasted but a few minutes, however, as the mold crumbled under the action of the air.

The bones did not crumble so quickly, however. Mr. McIntyre saw that the skeleton was that of a physical giant, and taking out the femur, he measured it. He found that it was 4 inches longer than the corresponding part of his own leg—and Mr. McIntyre is 6 feet in height. Within half an hour after being exposed to the air the bones fell into dust. The bottom of the grave was about 5 feet below the surface of the ground. In a few years the grave would probably have been exposed by the water widening the ditch.

Mr. McIntyre says that there have been white people in that part of Illinois for at least seventy-five years. The farm adjoining the land on which the grave was found was settled in 1833, and several settlements were made earlier than that. Many relics of the Indians and Spaniards have been found in that section, but none so strange as this. The coin itself is a curiosity, having a date upon it sixty-four years earlier

than the discovery of America, and yet found in a grave 5 feet deep in American soil.—"St. Louis Globe-Democrat."

ZUNÍ RUINS EXPLORED.

Prof. F. J. Fewks, of the Bureau of Ethnology, and Prof. C. W. Hough, of the National Museum, have returned to Washington after an interesting Archaeological exploration of the ruins of Arizona and New Mexico. Prof. Hough gives the following account of their expedition:

"Our first exploration was in the Upper Gila Valley, north of Navajo Springs. There we explored an ancient ruin, which has high walls around it. It was an ancient city of the Zunis, having about 1000 inhabitants, among whom we found no trace whatever of a white man. We discovered a number of pieces of pottery, stone implements and skulls. It was what is known as a pueblo of the Zuni people.

"One curious thing about the city, it was shaped like a butterfly. There was a high stone wall around it, evidently for protection, and it was probably 300 yards across. It lay in the slope of two hills, through which a stream ran. There was a large spring in the middle. It was known in the Zuni language as 'Kin Tiel,' meaning 'broad house.' The walls were probably 600 or 700 yards in circumference. The walls had only two openings through which men could crawl.

"There were arches in the walls through which the stream had evidently flowed and which were used in case of high water. We found a slab of stone near one of these openings with a circular hole, just large enough for a man to crawl through, and the edges of the hole were worn smooth, as if it had been used for this purpose. It had evidently fitted in one of the openings in the walls. The latter were about two and one-half feet thick. The foundations were of heavy stone.

"We found some arches, arrow heads and round balls of stone, probably used as slung-shots are, but unearched no metal objects whatever. The lines of houses could be plainly defined along the slope. We dug down into these lines and made many discoveries. We found an ancient shrine south of the ancient city. It was a low circular wall, about a yard in diameter. In the cavity formed by this wall was a heap of peculiar stones of odd shape, worked out into spherical forms. On top of these stones

were carved fetiches, consisting of two oddly shaped birds and a mammal, cut out of red sandstone. The largest was less than a foot long. They were evidently the gods of the shrine.

"Our second exploration was in the White mountains in Arizona, south of Holbrook, near the Mormon town of Snowflake. On a bluff above a dry stream we discovered the ruins of another ancient town, the vestiges of which have been almost obliterated. By digging down, however, we made our investigations in the houses. On the outskirts of the town we found pits dug down into the gravel, which had evidently been formed for reservoir purposes by the natives. In the bed of the stream we ran across rocks on which were hammered different symbols, such as corn, figures of persons, tracks of animals, etc. One of the stones was hollowed out in the form of a mortar, the most perfect we ever saw. We explored a number of rooms and brought out many relics of value. Among the rooms which we uncovered was one having a floor of sandstone slabs. The walls were of adobe, and one of the slabs which formed the door was about six feet in length. At one end of the room was a raised bench of sandstone, in front of which was a fireplace."

ANCIENT INDIAN CEMETERY.

In the heart of the little town of Santa Barbara, California, an archaeological excavation of interest is in progress. A few months ago the accidental discovery was made that the heights of Castle Point have been long, long ago in Indian burying ground. At once Mr. Louis Dreyfus began excavation which is not yet completed. But already plenty of bones, dust of bones, spear heads, stone implements, arrow-heads, shells and beads have been brought to light. This discovery is rather significant in that it is thought to be the initial point for prehistoric study in all this region.

The Rev. Dr. A. W. Patten of Chicago, at the Methodist Episcopal church congress Tuesday read a paper on "Important Finds in Christian Archaeology in Recent Years." He said in part: "This is pre-eminently the day of the archaeologist. The tape line and the spade are the commentators par excellence. There is an ancient tradition that the sitting statues of Mennon at Thebes emit a musical sound when first struck by the rays of the rising sun. The sun of the nineteenth century has touched every ancient statue, temple and rubbish heap. They are singing an anthem. The Christian scholar believes it is an anthem to the praise of God."

GIVEN TO THE SMITHSONIAN.

The Phillips Collection of Indian Relics.

Washington, Nov. 22.—The Smithsonian Institute has received lately a large contribution, making about 20,000 specimens, known as the Phillips collection of Indian relics. According to the students of anthropology, Washington is not the first capital which has been located on this site. Hundreds of years ago the locality was the head of the nation of the aboriginal tribes. Their weapons, implements, tools and cooking utensils are comprised in this collection, and are of great historical value, showing the difference between the resources of the aboriginal tribes and those of the inhabitants of the capital at present.

Washington undoubtedly was, from its position on the Potomac, the center of location of the noted Algonquin tribe, which occupied this section when it was explored by Captain John Smith and long previous to that time. The tribe which was located here was composed chiefly of the Powhattans, ruled over by that chieftain by whom Captain Smith was captured, and but for whose daughter, Pocahontas, he undoubtedly would have been put to death.

The capital of the powerful Algonquins was composed of many villages, grouped together. One of these was the present site of Anacostia, and from the name of the tribe located there the place received its name.

Evidences of this tribe are present all about Washington. Relics and antiquities at different times have been collected by those interested in these subjects, and they now fill many of the museums in this country, and are shown in those of others, while, as a natural result, the National Museum and Smithsonian Institution have received their share.

It is thought that the present collection, for which Mr. Phillips spent more than twenty years of time and trouble, is the most complete ever obtained by any museum.

Mr. Phillips pursued his investigations and researches down the Potomac, the Patuxent river as well, and along the Chesapeake. Up as far as Little Falls he worked on the eastern branch as far as Benning, and in and around Anacostia, where many of his specimens were

secured. Out toward Benning also many were collected.

When Mr. Phillips met with his untimely death the collection went to Mr. Thomas Lee, his intimate friend, who had the option of disposing of it as he might see fit. The result is that the Smithsonian has this magnificent collection.

Besides the American Indian relics, there is an exhibit of articles from the South Sea Islands, some of which were presented by the Queen of Tahiti.

The exhibit from Mexico is of general interest, containing a number of strange shape and design, whose purpose is unknown to the residents of this country. Taken as a whole, the collection is of the utmost importance, and is regarded as a splendid acquisition.

An ancient battle ground on which upward of a hundred thousand men gave up their lives has just been found in the Choctaw Nation, in the Indian Territory. Professor Edwin Walters, the archaeologist and geologist, made the remarkable discovery, and has quietly pushed his investigation, until he is able to furnish indisputable evidence of the soundness of his theories.

A few months ago, when the Kansas City, Pittsburg and Gulf railway was being built through that wild country, the construction gang, in excavating trenches on the right of way, cut into a singular formation. Under the top strata of alluvial soil they found a layer of adobe or plain formation of the quaternary period, and in the strata of fine silt lying underneath it were found the bones of countless warriors of a prehistoric race. Professor Walters learned of the discovery, and, under his direction, pits were dug in a great number of places, revealing the fact that under an area of thirty acres these skeletons of an extinct race were thickly buried.

The skulls are found to be broken, as if by blunt weapons, or pierced with spears or arrows. The arrow points are found inside the skulls or sticking into the other bones of the body. In parts of the burial grounds the bodies are placed in circles, with the feet together and the bodies radiating from the centre. A food bowl is usually found at the elbow of each warrior, evidently placed there in accordance with some religious belief.

Eldora, Io., September 22.—The skeleton of a prehistoric man has just been found by relic hunters in a big mound east of here on Cedar river. The bones are of abnormal size, as is the skull. Arrow heads, stone implements and pottery were found with the bones.

Mr. Fred B. Shuman, Clayton, Noble county, Ohio, writes that he has two crescent scrapers in his collection which were found five miles back from the Muskingum river and not near any other large body of water and from all appearances were made for a specific purpose.

Prof. W. K. Moorehead and family left for Phoenix, Arizona, November 29, where he expects to remain for a few months. He has not been in good health for some time, and a change of climate was ordered by his physician. It is the sincere hope of his many friends that he returns in the spring with renewed strength.

Dr. D. W. Barker of Brooklyn, has a large relic which cannot be named by any of the archaeologists to whom he has shown it. It is a gray sandstone and weighs $21\frac{1}{4}$ pounds. It was found upon the surface of Putnam county, N. Y. It is not a broken mortar, as at first glance, it would appear. The ends are carefully worked. I suggest to the doctor that it might have been a dead fall used in a trap.

W. T. Fenton, Conewango Valley, found a bar amulet in a plowed field near a swamp. It was made of ribbon slate and showed no usage marks. They wore this kind of relic tied on the arm.

Mr. Eugene Herrick, Mayville, New York, discovered a village site on the west side of Chautauqua Lake, one and one-half ($1\frac{1}{2}$) miles from the city, while grading for a summer resort. One of the specimens found was a celt, sharp on both ends, with the smaller notched like an arrow. He would like to know how general is the distribution of such relics and also what was their use.

Mr. Clarence Olsen, Winecone, Wisconsin, writes that he has an arrow, plowed up by a farmer on the bank of the historical old Fox. It is made of granite and is of immense size, measuring $14\frac{3}{4}$ inches long and $7\frac{3}{8}$ inches wide and weighs $11\frac{1}{8}$ pounds. It is perfect in form and has a very high polish. It is likely a spear shaped agricultural implement.

The Antiquarian.

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